

Owner's Manual

MRC V3.0

MIDI
Remote
Controller

lexicon

Unpacking and Inspection

After unpacking the MRC, save all packing materials in case you ever need to ship the unit. Thoroughly inspect the MRC and packing materials for signs of damage. Report any shipment damage to the carrier at once; report equipment malfunction to your dealer.

Notice

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designated to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Relocate the computer with respect to the receiver
- Move the computer away from the receiver
- Plug the computer into a different outlet so that the computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio/TV Interference Problems."

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

Acknowledgement

All terms mentioned in this book that are known to be trademarks or service marks are listed below. In addition, terms that are suspected of being trademarks or servicemarks have been appropriately capitalized. Use of a term in this manual should not be regarded as affecting the validity of any trademark or servicemark.

M1: KORG USA, 89 Frost Street, Westbury NY 11590
UltraHarmonizer: Eventide Inc., 1 Alsan Way, Little Ferry NJ 07643

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Patents are pending on the MRC

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Table of Contents

1. Introducing the MRC		7. Controlling the LXP-5	
Introduction	1-1	Establishing	
Front Panel	1-2	Communication	7-2
Rear Panel	1-3	LXP-5 Setups	7-3
		Viewing and Editing	
2. Operating the MRC		Parameters	7-4
Modes of Operation	2-2	LXP-5 Algorithms	7-4
Machines	2-4	Storing and Editing Setups ...	7-6
Machine Select Mode	2-5		
Machine Edit Mode	2-6	8. Generic MIDI control	
Machine Run Mode	2-8	GMIDI Overview	8-1
Setups	2-9	Selecting and Using	
Selecting a Setup	2-10	a GMIDI Setup	8-4
Storing a Setup	2-11	MIDI Registered and Non-	
Setup Edit Mode	2-12	Registered Parameters	8-11
Transmitting a Setup	2-14	SysEx Control	8-14
Transmitting a		GMIDI Presets	8-16
Program Change	2-15		
		9. Dynamic MIDI®	
3. System Parameters			
		10. Operating Notes	
4. Global Setups			
		11. Application Notes	
5. Controlling the LXP-1			
LXP-1 Algorithms	5-3	12. MIDI Implementation Data	
LXP-1 Setups	5-4		
LXP-1 Presets	5-5	13. Specifications	
6. Controlling the PCM-70			
PCM-70 Algorithms	6-2		
PCM-70 Setups	6-4		
PCM-70 Presets	6-5		
Software Variations	6-8		

1. Introducing the MRC

Introduction

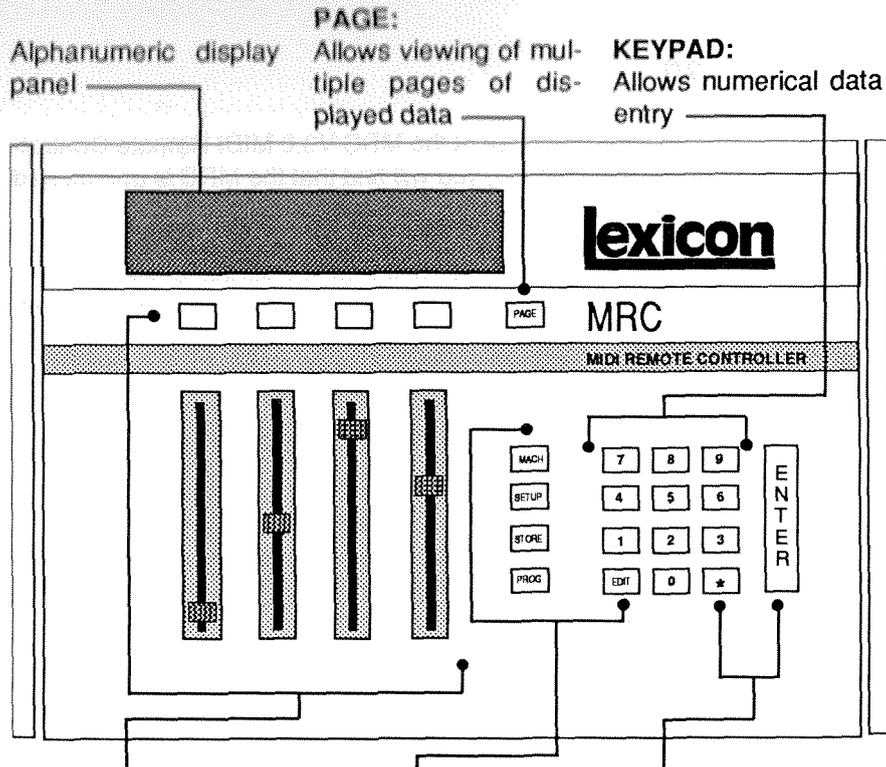
Congratulations on your purchase of the MRC V3.0 MIDI Remote Controller. Live on stage, or in the studio, you will find that the MRC is unmatched as an expressive MIDI controller for musicians and engineers.

The MRC was designed to serve as a flexible control center for many sound production environments. The MRC provides four basic operating modes. Two of these provide special control for Lexicon's LXP-1 and LXP-5 Multi-Effects Processing Modules, one provides control for the Lexicon PCM-70 Digital Effects Processor; the fourth allows full access to standard MIDI program change and controller messages on virtually any piece of MIDI equipment.

Assignable control combined with pre-programmed setups from the factory make the MRC simple and powerful. Whatever equipment you use, the MRC will bring a new level of versatility, expressiveness and ease of use to your performance.

This manual is designed to provide the information you need to familiarize yourself with the basic controls of the MRC and to get you started in each of the MRC's modes of operation. Because the MRC becomes a dedicated controller in each of its operating modes, this manual is divided into sections describing the controls common to all modes of operation, and individual sections on each of the four operating modes (LXP-1, PCM-70, LXP-5 and GMIDI). For the most effective use of the MRC, please also refer to the manufacturer's operating instructions for each specific piece of equipment in your system. You will find, as you tailor this information to fit your particular requirements, that the MRC's flexibility will not only give you unprecedented control, but will allow experimentation and expansion as your system grows.

MRC Front Panel



SLIDERS and SWITCHES: Referred to by numbers: 1, 2, 3, 4, reading left to right, these allow control over various parameters, depending on current mode of operation.

MACH/ SETUP/ STORE/ PROG/EDIT: Pushbutton commands to access the MRC's machine configuration, setup, and storage routines and MIDI program change.

*** ENTER:** Transmits the current Setup.

ENTER: Executes the current operation.

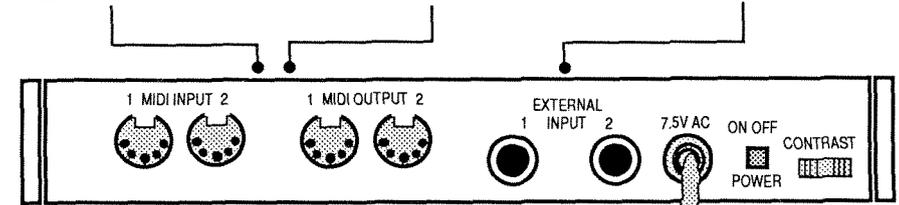
MRC Rear Panel

MIDI Connections

Inputs 1 and 2: Will accept any standard 5 pin DIN MIDI cable for receiving MIDI IN.

Outputs 1 and 2: Will accept any standard 5 pin DIN MIDI cable for sending MIDI OUT.

Inputs 1 and 2
Tip-ring-sleeve 1/4" phone jack inputs for switch or potentiometer external pedals or other controllers.



7.5V/AC
Power jack: Attach only the MRC power pack; connect power pack to AC outlet.

POWER
System On/Off. Data entered in the MRC is preserved during Power OFF. The MRC will power ON to the last target device selected.

CONTRAST
Dial for adjustment of display viewing angle and contrast.

The MRC must be used *only* with its supplied power pack. Voltage requirements are printed on the power pack.

2. Operating the MRC

The MRC is a dedicated remote controller for the Lexicon LXP-1, PCM-70 and LXP-5, and a software-defineable remote controller for all other MIDI equipment. It also provides a broad array of MIDI utility functions, including merging, remapping and the ability to reconfigure complex MIDI rigs with a single command.

This section describes the overall operation of the MRC. Subsequent sections of this manual provide more detailed information about particular features.

Definition of terms

Machine — the MRC's internal representation of an external target device; the MRC contains 16 independent internal machines.

Machine Type — the type of target device assigned to one of the MRC's internal machines; LXP-1, PCM-70, LXP-5 or GMIDI.

GMIDI (Generic MIDI) — a machine type allowing the MRC's front panel controls to be assigned to transmit almost any MIDI message.

Setup — the set of variable parameters for a particular machine type; in GMIDI, setups also define the function of the front panel controls.

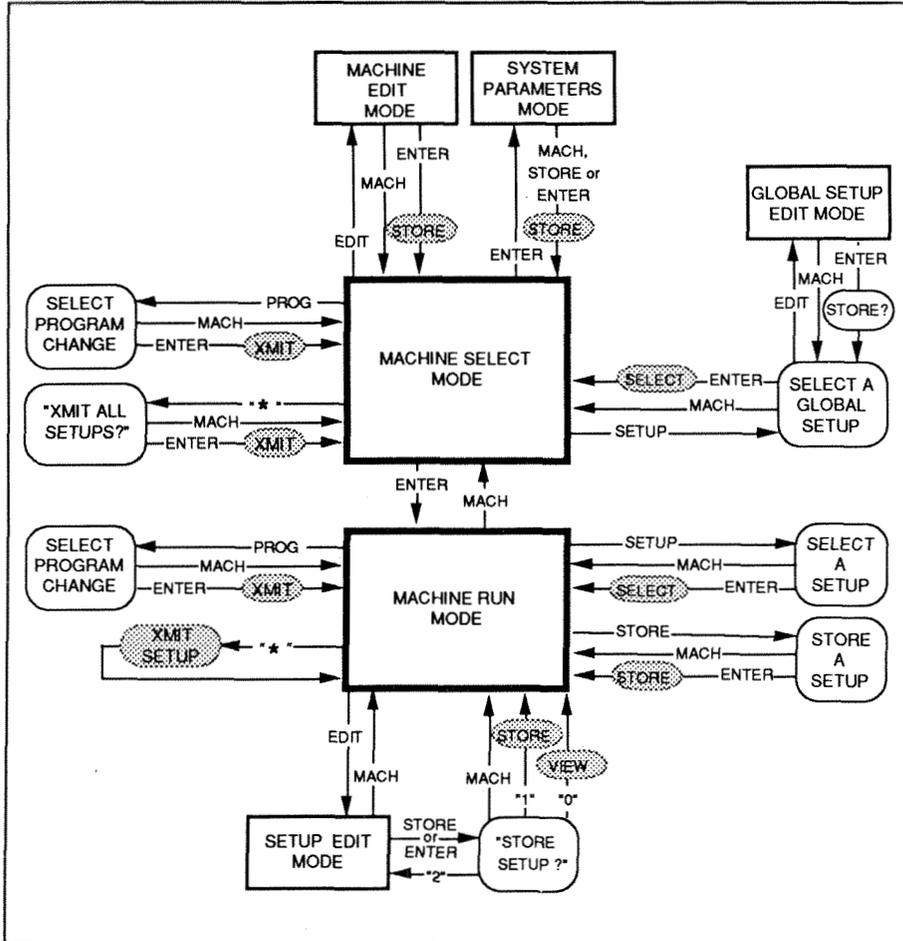
Setup Bank — all the setups for a particular machine type; setups can be stored to and selected from setup banks.

Global Setup — a general purpose setup allowing a complex MIDI rig to be configured with a single command; contains up to 32 MIDI Program Changes and a stored setup assigned to each machine.

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Modes Of Operation

The following diagram illustrates the MRC operating modes, and all of the MRC commands in relation to one another.



Once your system is set up, you will operate almost entirely in Machine Select Mode and Machine Run Mode, alternating between selection and control of the devices in your system.

Machine Edit Mode and System Parameters Mode, shown at the top of the diagram, are used primarily when setting up the MRC to work with your MIDI rig. Once this has been done, you will probably not use these modes often (unless you want to explore some of the MRC's more advanced MIDI capabilities; see Section 9: *Dynamic MIDP*.)

All of the functions relating to setups and global setups are shown at the bottom and right side of the diagram. This includes functions such as selecting, storing, and editing.

Two utility functions are shown at the left side of the diagram. These features allow you to quickly transmit a MIDI Program Change, or to transmit the parameter settings of the active setup(s).

All of these functions are covered in detail in the following sections.

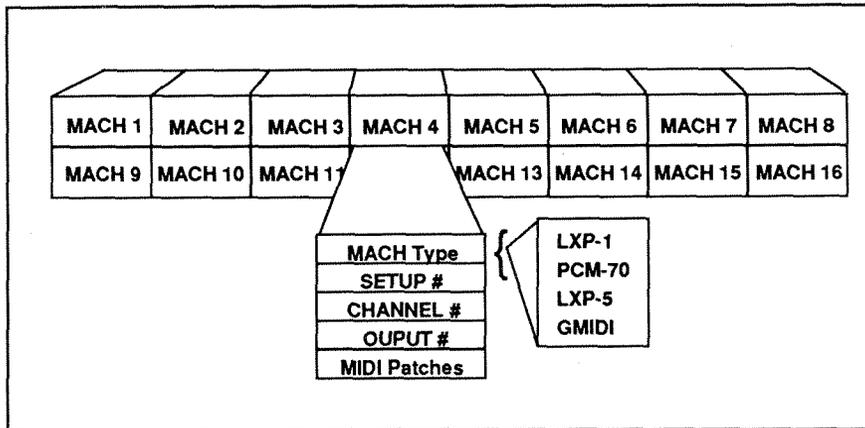
Helpful Hints

- MACH acts as an escape button; pressing MACH twice will step you back through the command sequence to Machine Select Mode.
- In any mode that has multiple pages, pressing and holding PAGE will show the page number and other pertinent information.
- In all the edit modes, sliders scroll through the values being edited; switches increment these values. When selecting from many values, use the slider to set a lower value than desired, then use the switch to step up to the exact value.
- The MRC, when first powered on, is in Machine Select Mode; thereafter it powers on to the last state it was in when powered off.

Machines

Since the MRC can control several target devices at once, it uses the concept of the *machine* to keep track of which target is being controlled at any given time. The MRC has 16 internal machines — each one the equivalent of a separate controller.

There are four categories of machine type. The LXP-1, PCM-70 and LXP-5 machine types are for controlling Lexicon effects processors. The GMIDI (Generic MIDI) machine type is for everything else.



Machine Select Mode

Machine Select Mode is the MRC's central mode, allowing you to select among the different machines. Most often you will be selecting a machine so that you can enter Machine Run Mode to control it. However, you also need to select a machine before editing it (to change the MIDI channel, for example).

Machine Select Mode also provides access to the System Parameters and Global Setups. (See Sections 3 and 4.)

At any time, pressing the MACH button twice will abort whatever is happening and return the unit to this mode.

The Machine Select menu provides the following information:

MACH #	(mtype)	SETUP #
CH#	OUT#	Setup Label

MACH#: the number of the selected machine (1-16)

mtype (machine type): LXP-1, PCM-70, LXP-5 or GMIDI

SETUP: the setup currently running on that machine

CH#: the MIDI channel assigned to that machine (1-16)

OUT#: the output port selected for that machine (1-2)

To select a machine, use the leftmost slider (Slider1) to scroll (or MACH to step sequentially) through the list of 16 machines, or enter the 2-digit machine number directly on the keypad.

During factory initialization, machines 1-4 are set to LXP-1, PCM-70, LXP-5 and GMIDI, respectively. The MIDI channel and output are set to 1. If you have no more than one each of the Lexicon processors, and you don't mind using them all on MIDI channel 1, then you can skip the following section on Machine Edit Mode and go directly to the section on Machine Run Mode.

Machine Edit Mode

The first step in setting up the MRC to work with your MIDI gear is deciding what pieces of equipment you want to control, and assigning MRC machines to them. This is done in Machine Edit Mode, where machines are set to the proper machine type, and the MIDI channel and output are selected.

In general, for each LXP-1, PCM-70 or LXP-5 in your system, there should be a single internal MRC machine dedicated to controlling it exclusively. For the rest of your MIDI equipment, a single MRC machine configured to GMIDI will probably suffice for a while. GMIDI is extremely flexible, and one GMIDI machine goes a long way.

To edit a particular machine, select the machine from the Machine Select menu, and press EDIT. The following display will appear:

Page 1

MACH#	TYPE	SETUP
(1-16)	(mtype)	(setup label)

This is the first of six pages of machine information in Machine Edit Mode.

Use Slider 2 to scroll (or Switch 2 to step) through the four available types of machines. "NONE" is included as an option to allow you to uninstall machines. Slider/Switch 3 selects the initial setup to be used for that machine.

Press PAGE to step through the other Machine Edit Mode pages. (Holding down PAGE will bring up a prompt displaying the mode and page number you have selected.) To go directly to a particular page, simply enter the page number on the keypad.

Page 2

MACH#	TYPE	SETUP#
CH #	OUT #	

On Page 2, use Slider/Switch 1 to select the MIDI channel, and Slider/Switch 2 to select the output. The upper row of display information is provided for convenient reference of machine number, type and setup as designated on Page 1.

Selection of channel numbers depends on the devices in your system. Although a number of devices can be assigned to the same MIDI channel, remember to avoid assigning devices of the same machine type to the same channel and output number unless you want simultaneous control.

Pages 3-6 of Machine Edit Mode allow editing of the MRC's unique Dynamic MIDI patches. These patches allow the MRC to take various MIDI input messages, or changes at the external inputs, and translate them into any MIDI message the MRC transmits. A full explanation of this powerful feature is provided in Section 9 of this manual.

To store the changes you've made, and return to Machine Select Mode, press ENTER or STORE. Newly selected setups will be transmitted for those machines which have had their type or setup number changed (except for GMIDI). To exit *without* storing or transmitting changes, press MACH.

Machine Run Mode

Machine Run Mode is where most of the real action takes place. In this mode, moving the sliders will cause MIDI messages to be transmitted to your target devices. (In GMIDI machines, the switches and external inputs can also transmit MIDI messages.)

To enter Run Mode for a particular machine, select the machine from the Machine Select menu, and press ENTER. The display will show several parameter values above the sliders, each with a label above it. This is true for all machine types, although the specific parameters will vary for each type. A typical Run Mode display is shown.

RTIME	SIZE	HICUT	FXLVL
2.93	64 M	6.90	100%

Press the PAGE key to cycle through the available pages. The page can also be selected by number at the keypad. The number of Run Mode pages, and the parameters on them, vary according to machine type. After a little practice, you'll become quite familiar with where various parameters are found on the different pages.

Try moving a slider—the parameter value above the slider should change. If you have a target device connected to the correct output on the correct MIDI channel, you should hear the change as well. (NOTE: If System Parameter: *Slider Nulling* is ON, the default setting, the slider must be moved *through* the current parameter setting before it has any effect. This feature is to prevent abrupt changes in critical parameters, and can be disabled.)

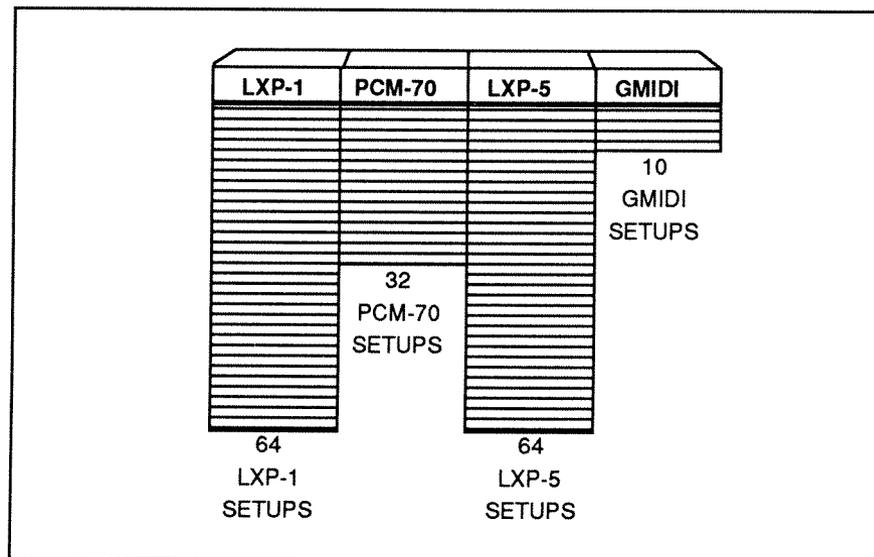
To view the page, machine number, setup number and algorithm, hold down the PAGE key. (The setup number will have a period (.) after it if the parameter values differ from those stored in the original setup location.)

Press MACH to return to Machine Select Mode, where another machine can be selected and ENTERed.

Setups

When you are adjusting parameters in Run Mode, a temporary copy of the values is maintained. If you find a combination of values that you would like to keep, you can store the current settings as a Setup and retrieve them later.

There are 4 Setup Banks, one for each machine type. All the machines of a certain type share the setups for that type. There are 64 LXP-1 setups, 32 PCM-70 setups, 64 LXP-5 setups and 10 GMIDI setups.



Selecting a Setup

At any time while in Run Mode, a different setup can be selected from the current type's Setup Bank. Press SETUP and the Setup Select menu will appear:

mtype	SETUP#	setuplabel algorithm
-------	--------	-------------------------

To select a setup, use Sliders 1 to scroll (or SETUP to step sequentially) through the available setups, or enter the 2-digit setup number directly on the keypad.

After finding the setup you want, press ENTER. All the parameter settings stored in the setup will be transmitted in a cluster, putting your target device into the state it was in when the setup was stored. The MRC will then automatically return to Run Mode, where you can adjust the new parameters individually, if desired.

GMIDI setups, because of their many possible applications, are not automatically transmitted when selected. To transmit an entire GMIDI setup, first select the setup by pressing ENTER, then press the asterisk (*) key after the MRC returns to Run Mode. (See Section 8.)

To return the system to Machine Run Mode without changing the setup, press MACH.

Storing a Setup

If you are adjusting parameters in Machine Run Mode, and you find a combination of values you would like to keep, you can quickly save them. Press STORE and the following display will appear.

STORE AS SETUP XX ?	
MACH > exit	ENTER > store

If you press ENTER without selecting a new setup location, the new parameter values will overwrite those in the original stored setup.

If you wish to keep the old parameter settings *and* store the new ones, you must first select a new setup location. Use Slider 1 to scroll (or SETUP to step sequentially) through the available setup locations, or enter the 2-digit setup number directly on the keypad.

When you've selected a new setup location, press ENTER and the new parameter values will be stored to that location. The name of this new setup, however, will be the same as that of the original setup. To give this setup a new name, see the following section, *Setup Edit Mode*.

For LXP-1 and LXP-5 machines, you can also use Slider 2 to choose between the MRC's internal setup locations and the register memory in the target device. To recall setups stored in the target device, you must transmit a MIDI Program Change to the target. (See page 2-15.) When a setup is recalled from the target's register memory in this way, the algorithm and parameter values will probably not agree with those shown on the MRC. Therefore, we recommend this option either when no further editing of the setup is required, or when the target device will later be used without the MRC.

To return to Machine Run Mode without storing the Setup, press MACH.

Setup Edit Mode (for LXP-1, PCM-70 and LXP-5)

GMIDI Setup Edit Mode is covered in full in Section 8.

Setup Edit Mode for LXP-1, PCM-70 and LXP-5 is useful in a couple of situations. If you want to store the current parameter settings to a new setup location with a *new name*, you can relabel and store the setup in this mode. Or, if you want to try out a new algorithm, you can change it here.

From Run Mode, press EDIT and the following display will appear.

mtype (pgm#)	SETUP#	setuplabel algorithm
-----------------	--------	-------------------------

This is Page 1 of three Edit Mode pages.

For PCM-70 machines, Slider 2 selects a MIDI Program Change to be associated with the setup. This is transmitted with the setup to ensure that the target PCM-70 is in the correct state for the parameters which follow. (See Section 6: *Controlling the PCM-70* for details.)

Slider 4 can be used to select a new algorithm. NOTE: The parameter values will still be set as they were for the old algorithm. This can often lead to interesting results upon returning to Machine Run Mode, and is encouraged. *In the case of the PCM-70, an extreme setting of a feedback parameter can cause runaway feedback.* Therefore, caution should be exercised.

If you want to change the algorithm with more predictable results, don't use Setup Edit Mode — go to the Setup Select Menu instead and select a setup with a different algorithm.

Pages 2 and 3 of Setup Edit Mode are for renaming the setup. Press PAGE to step through these pages.

Page 2	mtype s	SETUP# e	SETUP# t	setlabel l
Page 3	mtype a	SETUP# b	SETUP# e	setlabel l

Eight characters are available for labeling. On Page 2, the sliders scroll (and the switches step) through the available characters for the first four spaces in the label name. On Page 3, the sliders and switches perform the same function, allowing characters to be chosen for the remainder of the label name.

At any time while making edits on the three Setup Edit Mode pages, a new setup number can be selected for the edited setup by entering digits from the numeric keypad. If the edited setup is then stored (as described below) it will be stored at this new location. The new setup number will blink to show that it is different from the original.

To store an edited setup, press ENTER or STORE. The following display will appear:

STORE BEFORE EXITING?		
1>YES	0>NO	2>re-edit

Entering "1" will store and transmit the edited setup, and return you to Machine Run Mode. (A shortcut for performing this store, transmit and run function is: From Setup Edit Mode, hold down STORE, and press SETUP.)

Entering "0" will transmit the setup and return you to Run Mode without storing the setup. This is the most likely option if you have simply changed the algorithm.

Entering "2" will return you to Setup Edit Mode to allow re-editing.

At any time during this procedure you can exit the Setup Edit Mode without keeping the edits you have made by pressing MACH.

Transmitting a Setup

Sometimes the parameters displayed in Run Mode for the various MRC machines will not correspond to the actual parameter values in the target devices (for example, after setups have been changed at the target devices' front panels). The MRC provides a utility to quickly reset one or all of the target devices to correspond to the MRC's active setups.

To transmit the currently active parameter values for a single machine, press the asterisk (*) key while in Run Mode for that machine. The current parameter settings will be transmitted in a cluster, resetting the target device.

To transmit the currently active parameter values for all defined machines, press the asterisk (*) key while in Machine Select Mode. The following prompt will appear.

```

XMIT CURRENT SETUPS ?
MACH > exit      ENTER > xmit
  
```

Pressing ENTER will cause the setups in all defined machines (including GMIDI) to be transmitted.

Pressing MACH allows you to exit without transmitting any setups.

Transmitting a Program Change

Sometimes it is convenient to quickly transmit a MIDI Program Change (for example, to select a new program in a sound module). The MRC provides a utility function to do this.

From either Machine Select or Machine Run Mode, press PROG and the following display will appear.

```

PGM#          CH#          OUT#
MACH>exit     ENTER>xmit
  
```

Select a Program Change number (1-128) on the keypad.

Use Slider 3 to scroll through MIDI channel numbers 1-16 ("ALL" is provided for simultaneous transmission on all 16 channels, allowing instant control of multiple devices.) Use Slider 4 to select output numbers 1, 2, or 1 and 2.

Pressing ENTER causes the new program number to be transmitted on the channel(s) and output(s) selected and returns the MRC to Machine Select or Machine Run Mode. To return to Machine Select or Machine Run Mode *without* transmitting a MIDI program change, press MACH.

The default values of channel and output are usually those of the currently selected machine, with PGM# being the most recently transmitted program change number on that channel and output. However, if the last program change transmission was on "ALL" channels, the Program Change Menu comes up exactly as it was last seen. If the "PGMCH INCREMENT" option is selected (see System Parameters), the menu comes up as it was last seen, but with PGM# incremented by 1.

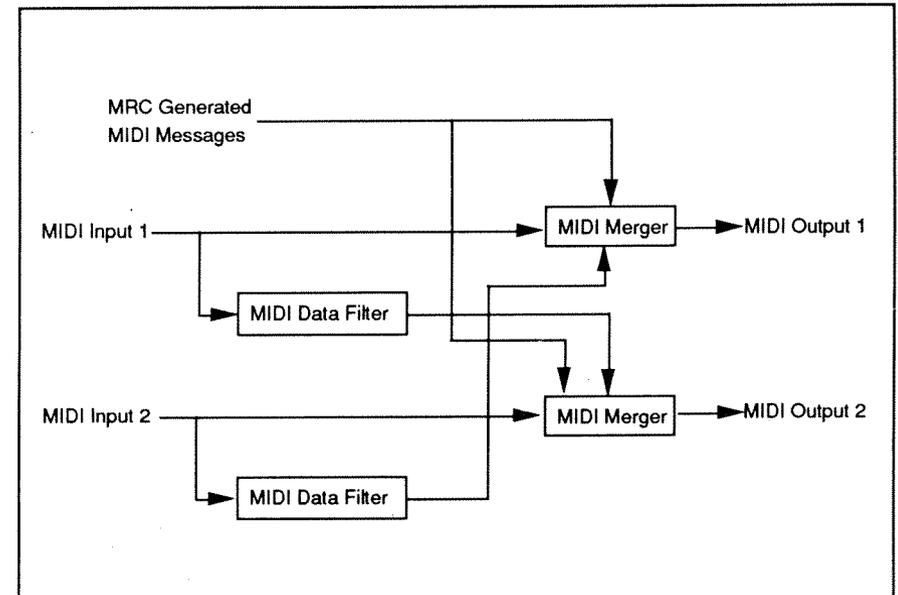
Note: Most MIDI devices, including the MRC, label Program Changes as numbers 1-128. The Lexicon PCM-70, and some other devices label Program Changes as numbers 0-127. Add 1 to Program Change numbers selected for such devices.

3. System Parameters

The Systems Parameters section of the MRC contains several special functions and user preference items that affect the MRC's overall operation. To enter the System Parameters Mode, go into Machine Select Mode, bring Slider 1 to the top of its range, then press ENTER. You will find nine pages of functions that can be addressed with the PAGE key or by entering page numbers on the keypad.

Page 1: MIDI Merging and Filtering

The MRC contains two MIDI Data Filters and two MIDI Merge units, each with three inputs. The diagram below illustrates the operation of the MRC MIDI Merge/Filter section.



On Page 1, Slider 1 (or Switch 1 — the pushbutton directly above it) allows you to select MIDI Input 1 or 2. Slider/Switch 2 allows you to select MIDI Output 1 or 2.

The selection of IN1->OUT1, or IN2->OUT2, allows enabling or disabling of the transmission of incoming MIDI information via Slider/Switch 3.

The selection of IN1->OUT2, or IN2->OUT1, allows you to individually enable or disable transmission of Continuous Controllers (CTRL), Pitch Bend, Aftertouch, Note On/Off and Program Change, via Slider/Switch 3 and 4.

Page 2: System Channel

This page allows selection of the MIDI Mode and Channel that will be used for receipt and transmission of MRC MIDI Bulk Dumps, and for receipt of Program Change messages

Slider/Switch 2 allows you to choose one of 16 MIDI channels which will be used for transmission of Bulk Dumps.

Slider/Switch 4 allows you to select Omni ON or Omni OFF. If Omni ON is selected, the MRC will respond to Bulk Dump or Program Change messages on any MIDI Channel. If Omni OFF is selected, those messages will only be received on the MIDI Channel chosen with Slider 2.

Page 3: Xmit Bulk Dump

This page allows the user to transmit several types of MIDI Bulk Dump. These can be used to transfer setup memories between two MRCs, or to archive setups in a computer or other bulk storage device.

BANK transmits all of the setups that correspond to one of the four machine types supported by the MRC. Slider/Switch 2 allows the user to determine which bank of setups will be transmitted.

SINGLE transmits just one setup at a time. In this case the user specifies the machine type, and identifies the setup to be transmitted. Slider/Switch 4 is used to choose which of the two MIDI outputs will be used for transmission of the Data.

Pressing the the asterisk (*) key will transmit the Bulk Dump specified.

Page 4: Slider Preferences

Slider/Switch 1 is used to select the mode of operation of the sliders throughout the Machine Run Modes. Slider Nulling ON means that no data will be transmitted by a slider until the slider has reached or passed through the previous value of that slider. This prevents abrupt changes in critical parameter values. If this is not important to you, you may want Slider Nulling OFF.

Slider/Switch 4 lets you "thin-out" the transmission of MIDI data. This can be very useful if the MRC is being used as input into a sequencer, where continuous data from the MRC controls can use up a lot of memory. Slowing down the rate of transmission conserves memory. It may also be useful in instances of MIDI data clogging (Buffer Overflow) on a synthesizer or other device.

Page 5: External Input Modes

The two External Inputs on the MRC (controlled by Slider/Switch 1 and 4) each have five different modes of operation: OFF, NORMAL, PATCH, GLB-UP, and GLB-DN.

OFF means that the External Input will have no effect.

NORMAL means that a continuous control pedal or footswitch connected to the input will be active only in GMIDI run mode.

PATCH allows the input jack to be used as a Source for the Dynamic MIDI® patches of the MRC (See Section 9: Dynamic MIDI®.)

GLB-UP allows footswitch stepping through the Program Change Table of Global Setups.

GLB-DN does the same in the opposite direction.

The External Inputs can be used with control pedals that use a stereo (tip-ring-sleeve) phone plug for connection. (Pedals provided by synthesizer manufacturers for their products are suitable.) For foot switches, a slightly unusual wiring is required. The footswitch connector should be a tip-ring-sleeve type, 1/4" phone plug. The footswitch itself is wired to the tip and ring, a short is required between the sleeve and the tip. Almost any footswitch can be quickly modified using easily available parts.

Page 6: Selection of Global Setups by MIDI Program Changes

This page controls the response of the MRC to incoming MIDI Program Change messages, as well as the stepping operations for Global Setups.

Incoming MIDI Program Changes are mapped to Global Setups by the Program Change Table. The 128 locations in this table are edited by Slider/Switch 1 and Slider/Switch 2.

Slider/Switch 4 enables the MRC's response to incoming MIDI Program Changes. (Note: In order for Program Changes to be recognized, they must either be on the System Channel, or Omni Mode must be ON. Both of these options can be set on page 2 of this mode.)

The Program Change Table is also used by External Inputs set to GLB-UP or GLB-DN (see above), and by stepping operation of the SETUP key if Global Setup AutoLoad is enabled (see below). The last location in the table selected for editing is the point from which stepping begins. Incoming Program Changes will reset this point to the location corresponding to the Program Change number.

Refer to Section 4: Global Setups for more details.

Page 7: Program Change Auto-Increment/Global Setup Auto-Load

These are user-preference items that affect Program Change Transmission and Global Setup selection.

When enabled, this causes the Program Change menu's default program number to be incremented after each transmission. (See Section 2: Operating the MRC, *Transmitting Program Changes*.)

Global Setup AutoLoad is enabled by Slider/Switch 4. When enabled, pressing SETUP while in the Global Setup menu will step sequentially through the Global Setups specified in the Program Change Table, loading a new Global Setup each time.

Page 8: Memory Protect and MIDI-Patch Enable

If the Memory Protect is switched ON (Slider/Switch 1), then all attempts to store changes to setups will be rejected.

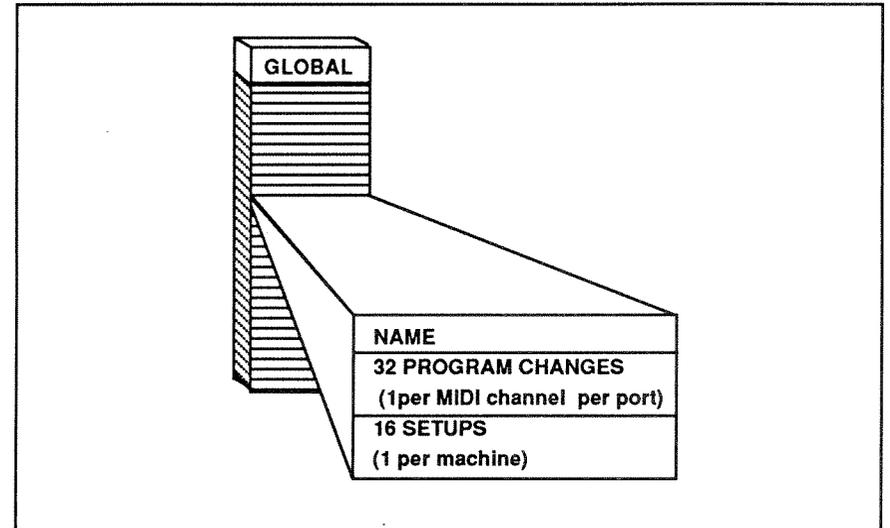
Dynamic MIDI® Patches can be turned on or off globally using Slider/Switch 4. (See Section 9: Dynamic MIDI® for details of operation of the patches. — If you think that MIDI patches are causing you a problem, you can turn them off here. Likewise, if you're having trouble getting the patches to operate, it may be because they have not been enabled!)

Page 9: Monitor MIDI Input

This function is activated when you press the asterisk key in response to the display prompt. When activated, the display will show the last MIDI message received. Five types of message are monitored: Note On/Off, Continuous Controller, Pitch Bend, Channel Aftertouch, and Program Change. This function can be extremely useful to verify the operation of a MIDI system. Press any key to exit.

4. Global Setups

The MRC can give you the ability to change the state of an entire MIDI studio with a single command. As many as 16 Lexicon processors and 32 other MIDI devices can be put into pre-defined programs! 20 of these *Global Setups* are provided. These can be addressed from the MRC front panel, by footswitches connected to the External Inputs, or by MIDI Program Change messages from another source.



Accessing Global Setups

From Machine Select Mode, press SETUP to bring up the Global Setup Select menu. One of the 20 available setups can be chosen using Slider 1, the SETUP key, or by entering the setup number on the keypad. To transmit the selected Global Setup, press ENTER.

Creating a Global Setup

To create a Global Setup, select a setup number as described above, then, instead of ENTER, press EDIT. This will put the MRC into Global Setup Edit Mode. The first two pages of controls let you enter a name for this setup. Each page allows four characters of an 8-character name to be entered using the sliders and pushbuttons. Use the buttons to step through the available characters — if you overshoot, use the slider to get back "underneath" the desired character.

The next page lets you define a MIDI Program Change message for each of 16 MIDI channels on each of the two MIDI outputs. Slider/Switch 1 selects the channel number; Slider/Switch 2 selects the output; Slider/Switch 3 selects the Program Change number that will be transmitted for each channel and output.

The next page allows you to assign a Setup for each of the machines that are currently assigned on the MRC. This is useful to control any Lexicon processors that are connected. Note that the LXP-1 and LXP-5 can safely be used on a MIDI channel which has a Program Change message assigned to it, but a PCM-70 should have a channel to itself.

GMIDI type Machines can also be assigned a Setup as part of a Global Setup, allowing all MIDI messages associated with the setup to be transmitted. This allows complex groups of controller messages to be sent in a burst.

Pressing ENTER key will cause a display prompt — answer "1" to store and exit. It is also possible to store and exit by pressing and holding the STORE key, then pressing SETUP.

Using MIDI Program Change to Select Global Setups

On page 6 in System Parameters Mode, the user can enable Program Change messages to select Global Setups. A Program Change Table is also provided to determine which of the 20 Global Setups will be recalled for each possible MIDI Program Change. The Program Change messages must be received on the MIDI channel defined on System Parameters page 2.

Global AutoLoad

If you are using the Global Setups a lot, you may wish to use the AutoLoad feature which lets you step through the Global Setups with a single keystroke each time.

Global AutoLoad is enabled on page 7 in System Parameters Mode. When it is turned ON, the operation of Global Setup selection is changed so that, once the Global Setup Select menu has been entered, the next setup in the Program Change Table can be loaded just by hitting the SETUP key.

Otherwise, it takes at least three keystrokes to go from one Global Setup to another.

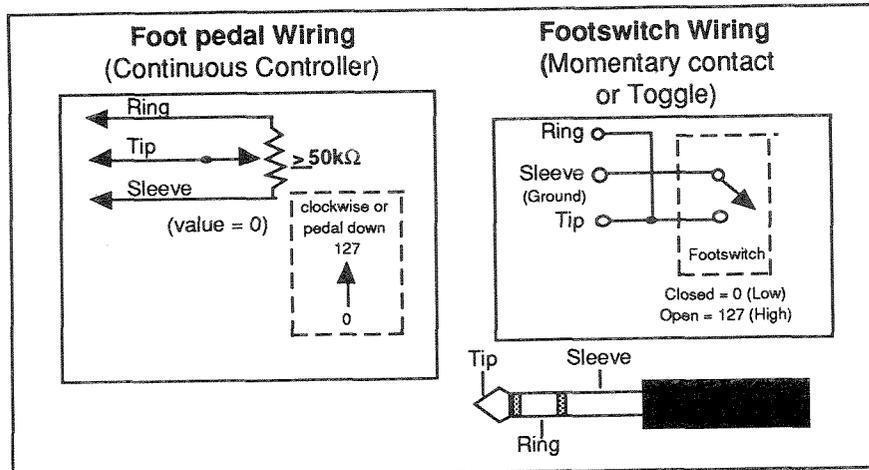
Note: The last location in the Program Change Table selected for editing is the point from which stepping begins. Incoming Program Changes will reset this point to the location corresponding to the Program Change number.

Using External Foot Switches to Load Global Setups

Page 5 in System Parameters Mode allows you to select the mode of operation of the MRC's two External Inputs. Selecting either GLB-UP (Global Setup Step Up), or GLB-DN (Global Setup Step Down) allows you to change the state of an entire MIDI performance system with a footswitch.

The Global Setups are selected in the order in which they are found in the Program Change Table.

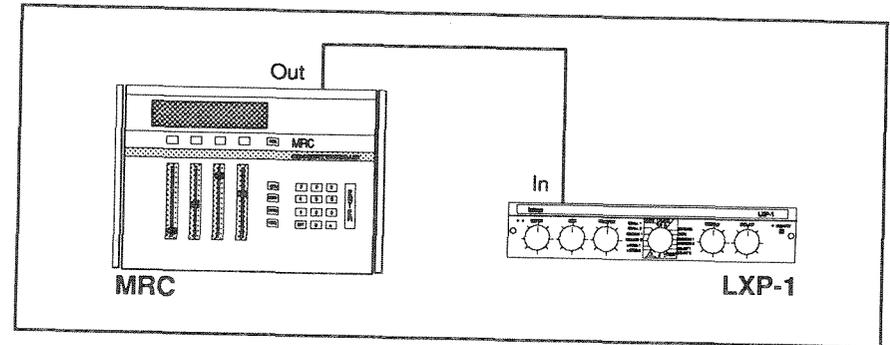
The MRC's External Inputs require a slightly unusual wiring of the footswitch to operate properly. The connector from the footswitch should be a tip-ring-sleeve type, 1/4" Phone plug. The footswitch itself is wired to the sleeve and ring, a short is required between the ring and the tip.



Note: The last location in the Program Change Table selected for editing is the point from which stepping begins. Incoming Program Changes will reset this point to the location corresponding to the Program Change number.

5. Controlling the LXP-1

The MRC expands the functionality of the LXP-1 by giving you control over its many effects parameters. Connection of the MRC to the LXP-1 is straightforward and requires only a standard MIDI cable, connected as shown.



Putting the MRC into LXP-1 Run Mode is even simpler.

From Machine Select Mode, step or scroll through the list of machines and select LXP-1. Press ENTER.

The display will immediately change to the LXP-1 Run Mode display and will show Page 1 of the available parameters for the processing algorithm selected. Pressing PAGE will alternate the display of the two available pages.

The LXP-1 has eight algorithms, each of which has up to eight control parameters. These parameters are arranged in groups of three or four on the two consecutive display pages. For any given display page, the sliders directly beneath the parameters shown allow selection over the entire range of values available for that parameter. (The Switch buttons and external inputs are disabled.)

The MRC is capable of forcing the LXP-1 into specified algorithms so that the control data that will be accepted by the LXP-1 corresponds to the fader labels and parameter output from the MRC.

NOTE: The LXP-1 powers up to the last program running when powered down. If the user changes the program at the LXP-1 to a new algorithm without changing the MRC, it will put the units into unlike algorithms. In such a case, the MRC will not be transmitting data which is recognizable to the LXP-1, and incorrect changes (or no changes) may occur.

To set the LXP-1 to agree with the MRC, press the asterisk (*) key to transmit the current setup.

If the LXP-1 has been used with any other MIDI device on a different channel than that specified by the MRC, it must be reset to recognize MRC control. To reactivate the correct communication link with the MRC, hold down the MIDI button on the LXP-1 and move any of the MRC's sliders enough to change a parameter value.

For your reference, the following table lists the algorithms, their parameters, and the range of each parameter. For detailed information and technical definitions of the algorithms and their parameters, please refer to the LXP-1 Owner's Manual.

LXP-1 Algorithms

REVERB

Page 1	RTIME .63 - 8.9 sec.	SIZE 8 - 71m	HICUT .321 - 13.8 kHz	FXLVL 0 - 100%
Page 2	BASS .3 - 2.5 x	PDLY .000 - .262 sec.	FDBK -99 - +99%	DIFF 0 - 100

PLATES

Page 1	RTIME .63 - 8.9 sec.	SIZE 8 - 71m	HICUT .321 - 13.8 kHz	FXLVL 0 - 100%
Page 2	BASS .3 - 2.5 x	PDLY .000 - .262 sec.	FDBK -99 - +99%	DIFF 0 - 100

CHORUS 1

Page 1	RATE 0 - 15	DEPTH .25 - 8.00 ms	SHAPE 0 - 7	FXLVL 0 - 100%
Page 2	L-DLY 0 - 1 sec.	LFDBK -99 - +99%	R-DLY 0 - 1 sec.	RFDBK -99 - + 99%

CHORUS 2

Page 1	TUNE -64 - +63	RESON -99 - +99%	LOCUT 19Hz-16.3K	FXLVL 0 - 100%
Page 2	SLOPE -15 - +16.	PDLY .000 - .262 sec	RICH 0 - 100	SHIMR 0 - 100

DELAY 1

Page 1	RATE 0 - 15	DLY 0.0-803 ms	HICUT .321 - 13.8 kHz	FXLVL 0 - 100%
Page 2	DLY-2 0 - 1.02 sec.	DLY-3 0 - 1.02 sec.	FDBK3 -99 - +99%	DIFF 0 - 100

DELAY 2

Page 1	GPDLY 1.7-611	FDBK -99 - +99%	HICUT .321 - 13.8 kHz	FXLVL 0 - 100%
Page 2	L-DLY 0 - 1.02 sec.	R-DLY 0 - 1.02 sec.	DIFF 0 - 100	Unused

INVERSE

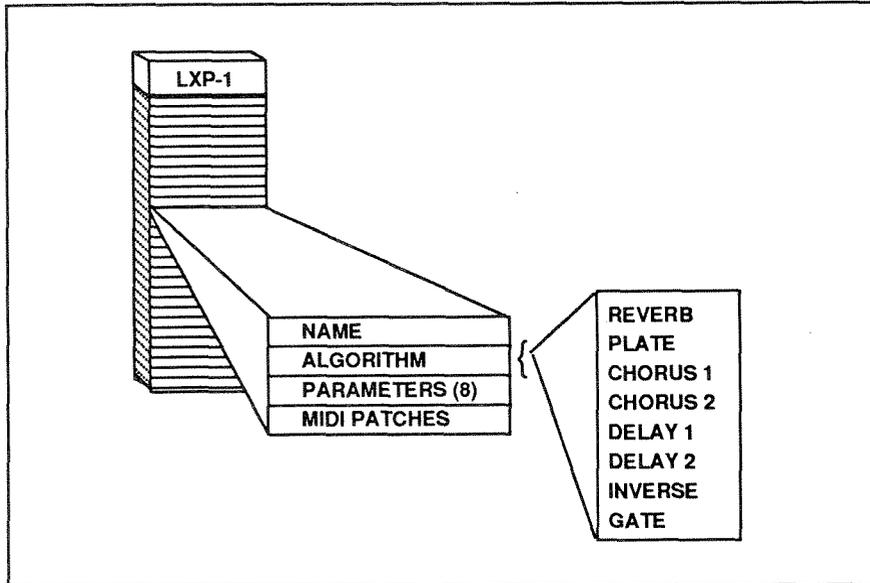
Page 1	SLOPE 0 - 31	SIZE 1 - 32	HICUT .321 - 13.8 kHz	FXLVL 0 - 100%
Page 2	FDBK -99 - +99%	PDLY .000 - .262 sec.	DIFF 0 - 100	Unused

GATE

Page 1	SLOPE 1 - 16	TIME 150 - 390 ms	HICUT .321 - 13.8 kHz	FXLVL 0 - 100%
Page 2	FDBK -99 - +99%	PDLY .000 - .262 sec.	DIFF 0 - 100	Unused

LXP-1 Setups

Selecting LXP-1 as a Machine type allows access to a bank of 64 setups, shared by all machines designated as LXP-1.



The MRC is shipped with its 64 available LXP-1 Setups installed as temporary Presets. Setups #'s 1-16 closely approximate the preset programs installed in the LXP-1 and can be used interchangeably with them. Setup #'s 17-32 represent new sounds for the LXP-1 that can only be created with the MRC. Note, however, that these Setups are not permanent default settings; user-defined setups can be stored to these locations instead, overwriting the factory presets. Setup #'s 33-64 are empty.

For your reference, the following table shows each of these preset Setups, with the parameter values initially assigned to them.

LXP-1 Preset Setups 1-16

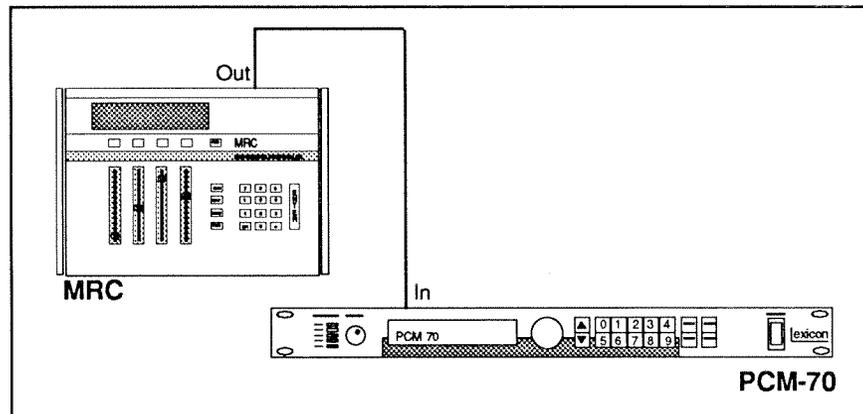
#	Name	Type	Rtime	Size	HiCut	FxLvl	Bass	Pdly	Fdbk	Diff
1	BRITHALL	Reverb	2.93	64 M	6.90	100%	.71	.033	0%	75%
2	DARKHALL	Reverb	2.10	60 M	3.45	100%	1.40	.033	0%	70%
3	LRGE RM1	Reverb	3.60	43 M	6.90	100%	.71	.033	0%	75%
4	LRGE RM2	Reverb	2.93	51 M	4.11	100%	1.40	.033	0%	60%
5	MED RM1	Reverb	2.93	36 M	4.88	100%	2.50	.017	0%	71%
6	MED RM2	Reverb	2.93	30 M	6.90	100%	.71	.017	0%	85%
7	SMALLRM1	Reverb	4.54	15 M	4.88	100%	1.40	.000	0%	74%
8	SMALLRM2	Reverb	4.54	8 M	8.33	100%	.63	.000	0%	88%
9	DRKPLATE	Plate	2.45	27 M	4.88	100%	1.40	.000	0%	88%
10	BRTPLATE	Plate	3.60	36 M	5.80	100%	1.00	.000	0%	78%
			<u>Slope</u>	<u>Time</u>	<u>HiCut</u>	<u>FxLvl</u>	<u>Fdbk</u>	<u>Pdly</u>	<u>Diff</u>	
11	GATE	Gate	16	180	6.90	100%	0%	.000	88%	
			<u>Slope</u>	<u>Size</u>	<u>HiCut</u>	<u>FxLvl</u>	<u>Fdbk</u>	<u>Pdly</u>	<u>Diff</u>	
12	INVERSE	Inverse	31	5	6.90	100%	0%	.000	99%	
			<u>Rate</u>	<u>Depth</u>	<u>Shape</u>	<u>FxLvl</u>	<u>L-dly</u>	<u>L-Fdbk</u>	<u>R-dly</u>	<u>R-Fdbk</u>
13	CHORUS1	Chorus1	1	4.00	6	100%	0.00	0%	0.00	0%
			<u>Tune</u>	<u>Reson</u>	<u>LoCut</u>	<u>FxLvl</u>	<u>Slope</u>	<u>Pdly</u>	<u>Rich</u>	<u>Shimr</u>
14	CHORUS2	Chorus2	0	+90%	19Hz	100%	5	.066	26%	6%
			<u>Rate</u>	<u>Delay</u>	<u>HiCut</u>	<u>FxLvl</u>	<u>Dly-2</u>	<u>Dly-3</u>	<u>Fdbk3</u>	<u>Diff</u>
15	DELAY1	Delay1	8	279	10.3	100%	0.00	0.00	+39%	25%
			<u>GoDly</u>	<u>Fdbk</u>	<u>HiCut</u>	<u>FxLvl</u>	<u>L-dly</u>	<u>R-dly</u>	<u>Diff</u>	
16	DELAY2	Delay2	99.6	+25%	10.3	100%	0.00	0.00	13%	

LXP-1 Preset Setups 17-32

#	Name	Type	Rtime	Size	HiCut	FxLvl	Bass	Pdly	Fdbk	Diff
17	TIGHT	Reverb	.82	23 M	13.8	100%	2.50	.000	0%	77%
18	MIDVERB	Reverb	1.37	41 M	13.8	100%	1.20	.000	0%	50%
19	LONGVERB	Reverb	3.60	37 M	6.90	100%	1.20	.000	0%	60%
20	HUGEVERB	Reverb	6.10	71 M	5.80	100%	1.20	.065	+20%	74%
21	GUDPLATE	Plate	1.06	67 M	8.33	100%	1.40	.050	-6%	80%
22	CHURCH1	Plate	4.54	71 M	3.45	100%	2.20	.083	+8%	77%
			<u>Slope</u>	<u>Size</u>	<u>HiCut</u>	<u>FxLvl</u>	<u>Fdbk</u>	<u>Pdly</u>	<u>Diff</u>	
23	DEVERSE	Inverse	31	17	13.8	100%	0%	.000	100%	
24	REVRPEAT	Inverse	19	8	13.8	100%	+30%	.202	61%	
			<u>Slope</u>	<u>Time</u>	<u>HiCut</u>	<u>FxLvl</u>	<u>Fdbk</u>	<u>Pdly</u>	<u>Diff</u>	
25	GATESLAP	Gate	8	273	6.90	100%	+0%	.130	50%	
			<u>Rate</u>	<u>Depth</u>	<u>Shape</u>	<u>FxLvl</u>	<u>L-dly</u>	<u>L-Fdbk</u>	<u>R-dly</u>	<u>RFdbk</u>
26	FULLCHOR	Chorus1	8	1.76	6	100%	0.03	-35%	0.04	+44%
27	SLAPFLNG	Chorus1	2	5.51	7	100%	0.15	+19%	0.19	- 2%
			<u>Tune</u>	<u>Reson</u>	<u>LoCut</u>	<u>FxLvl</u>	<u>Slope</u>	<u>Pdly</u>	<u>Rich</u>	<u>Shimr</u>
28	EDGE1	Chorus2	6	+88%	2.3K	100%	+4	.000	73%	73%
29	OPENHARP	Chorus2	0	+99%	4.0K	100%	+4	.126	66%	86%
			<u>Rate</u>	<u>Delay</u>	<u>HiCut</u>	<u>FxLvl</u>	<u>Dly-2</u>	<u>Dly-3</u>	<u>Fdbk3</u>	<u>Diff</u>
30	SLAPIT	Delay1	0	115	13.8	100%	0.00	0.00	+7%	0%
			<u>GpDly</u>	<u>Fdbk</u>	<u>HiCut</u>	<u>FxLvl</u>	<u>L-dly</u>	<u>R-dly</u>	<u>Diff</u>	
31	IMAGE	Delay2	20.3	+3%	13.8	100%	0.06	0.02	54%	
32	SIDESLAP	Delay2	49.8	+27%	4.11	100%	0.34	0.22	100%	

6. Controlling the PCM-70

The MRC behaves as a dedicated remote controller for the Lexicon PCM-70, allowing easy access to many of the PCM-70's reverb and effects parameters. Connection of the MRC to the PCM-70 is straightforward and requires only a standard MIDI cable, connected as shown.



Putting the MRC into PCM-70 Run Mode is also a simple procedure.

From Machine Select Mode, step or scroll through the list of machines and select a machine with the type: PCM-70. Press ENTER.

The display will immediately change to the PCM-70 Run Mode display and will show Page 1 of the available parameters for the processing algorithm selected. Pressing PAGE will alternate the display of two available pages. The Setup number, name, and the algorithm selection may be viewed by pressing PAGE and holding it down. Upon release of the PAGE button, the display will step to the next page of controls, so be careful that you don't inadvertently change a parameter other than the one intended.

Pressing SETUP, activates Slider 1 and allows viewing and selection of the available algorithms.

Eight algorithms are available, each of which has up to twelve control parameters. We have selected what we think are the most useful parameters. (Using the PCM-70 Dynamic MIDI® you can select up to 10 additional parameters to be controlled by GMIDI. (See Section 8.) These parameters are arranged in groups on the three consecutive display pages. For any given display page, the sliders directly beneath the parameters shown allow scrolling of the entire range of values available for that parameter. (Switch buttons and external inputs are disabled.) Note that the selection of parameters available for adjustment is different depending on which PCM-70 algorithm is in use. In all cases the values are displayed on the MRC in arbitrary units within a range of 0-255. In order to see the value of a parameter in terms of ordinary units, you must refer to the display window of the PCM-70 being controlled.

For your reference, the following tables list the algorithms and their parameters. For detailed information and technical definitions of the algorithms and how presets are organized according to algorithm, please refer to the PCM-70 Owner's Manual.

CHORUS & ECHO

Page 1	MDLY Delay Master	MFDBK Feedback Master	MLVL Level Master	CHRS Chorusing
Page 2	V1DLY Voice 1 Delay	V1FDBK Voice 1 Feedback	V1LVL Voice 1 Level	V1PAN Voice 1 Pan
Page 3	V4DLY Voice 4 Delay	V4FDBK Voice 4 Feedback	V4LVL Voice 4 Level	V4PAN Voice 4 Pan

MULTI-BAND DELAY

Page 1	MDLY Delay Master	V2FDBK Voice 2 Feedback	MLVL Level Master	DIFF Diffusion
Page 2	V1DLY Voice 1 Delay	V1FDBK Voice 1 Feedback	V1LVL Voice 1 Level	V1PAN Voice 1 Pan
Page 3	MLFC Lo-Cut Master	MHFC Hi-Cut Master	V2LVL Voice 2 Level	V2PAN Voice 2 Pan

RESONANT CHORD

Page 1	MLVL Level Master	RESON Resonance Master	MDLY Delay Master	PITCH Pitch Master
Page 2	V3FBK Voice 3 Feedback	V6FBK Voice 6 Feedback	HFCL Hi-Cut Left	HFCR Hi-Cut Right
Page 3	PITCH1 Pitch 1	PITCH2 Pitch 2	PITCH3 Pitch 3	PITCH4 Pitch 4

CONCERT HALL, PLATE and CHAMBER

Page 1	RTLOW Reverb Time Low	RTMID Reverb Time Mid	SIZE Size	PDLY Pre-Delay
Page 2	XOVER Crossover	HICUT Hi-Cut	MLVL Level Master	MDLY Delay Master
Page 3	RTLSTP Stop Reverb Low	RTMSTP Stop Reverb Mid	GATE Gate Time	DIFF Diffusion

INFINITE REVERB

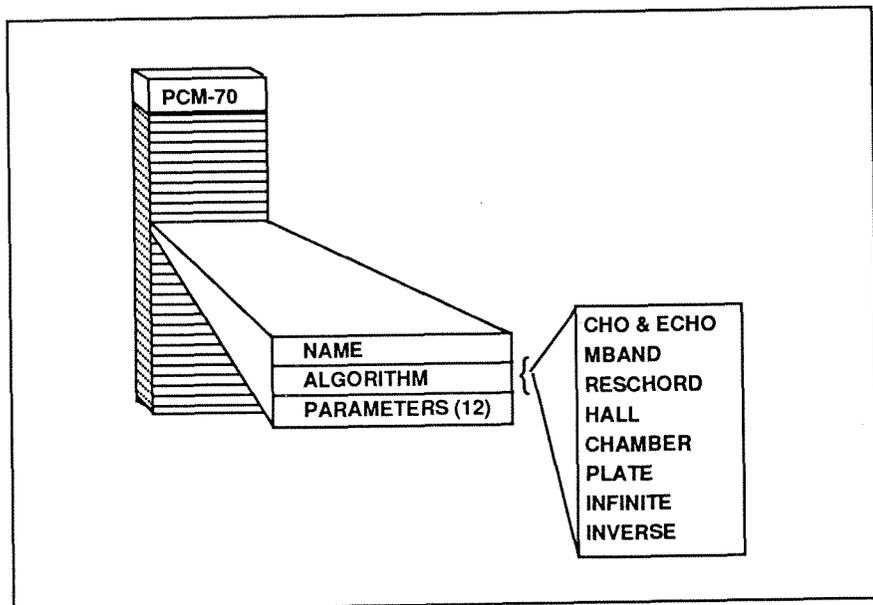
Page 1	RTIME Reverb Time	FXADJ Effect Level	SIZE Room Size	PDLY Pre-Delay
Page 2	ATTACK Attack	HICUT Hi-Cut	MLVL Level Master	MDLY Delay Master
Page 3	L1RFL Left Delay	R1RFL Right Delay	DIFF Diffusion	DEF Definition

INVERSE ROOM (only available on PCM-70s with 3.01 Software installed)

Page 1	LSLOPE Low	RSLOPE Mid	DUR Duration	PDLY Pre-Delay
Page 2	XOVER Crossover	HICUT Hi-Cut	MLVL Level Master	MDLY Delay Master
Page 3			FXADJ Effect Level	DIFF Diffusion

PCM-70 Setups

Selecting PCM-70 as a Machine type allows access to a bank of 32 setups, shared by all machines designated as PCM-70.



The MRC is shipped with the first 16 of these Setups installed as temporary Presets. Note that these Setups are not permanent default settings; user-defined setups can be stored to these locations instead, overwriting the factory presets.

For your reference, the following table shows each of these preset Setups, with the parameter values initially assigned to them.

PCM-70 Preset Setups

1	PCM70 SETUP 1 CHORUS PROGRAM 51 CHO&ECHO	<u>MDLY</u> 127 <u>V1DLY</u> 65 <u>V4DLY</u> 52	<u>MFDBK</u> 127 <u>V1FDBK</u> 132 <u>V4FDBK</u> 114	<u>MLVL</u> 127 <u>V1LVL</u> 255 <u>V4LVL</u> 255	<u>CHRS</u> 167 <u>V1PAN</u> 0 <u>V4PAN</u> 255
2	PCM70 SETUP2 CHRECHO PROGRAM 52 CHO&ECHO	<u>MDLY</u> 127 <u>V1DLY</u> 71 <u>V4DLY</u> 255	<u>MFDBK</u> 127 <u>V1FDBK</u> 127 <u>V4FDBK</u> 68	<u>MLVL</u> 127 <u>V1LVL</u> 255 <u>V4LVL</u> 94	<u>CHRS</u> 128 <u>V1PAN</u> 0 <u>V4PAN</u> 255
3	PCM70 SETUP3 SFLANGE PROGRAM 54 CHO&ECHO	<u>MDLY</u> 127 <u>V1DLY</u> 19 <u>V4DLY</u> 23	<u>MFDBK</u> 127 <u>V1FDBK</u> 159 <u>V4FDBK</u> 94	<u>MLVL</u> 127 <u>V1LVL</u> 255 <u>V4LVL</u> 255	<u>CHRS</u> 159 <u>V1PAN</u> 0 <u>V4PAN</u> 255
4	PCM70 SETUP4 DBLESLAP PROGRAM 55 CHO&ECHO	<u>MDLY</u> 127 <u>V1DLY</u> 154 <u>V4DLY</u> 151	<u>MFDBK</u> 127 <u>V1FDBK</u> 156 <u>V4FDBK</u> 156	<u>MLVL</u> 127 <u>V1LVL</u> 255 <u>V4LVL</u> 255	<u>CHRS</u> 141 <u>V1PAN</u> 0 <u>V4PAN</u> 255
5	PCM70 SETUP5 ECHO BPM PROGRAM 59 CHO&ECHO	<u>MDLY</u> 127 <u>V1DLY</u> 127 <u>V4DLY</u> 0	<u>MFDBK</u> 127 <u>V1FDBK</u> 160 <u>V4FDBK</u> 127	<u>MLVL</u> 127 <u>V1LVL</u> 174 <u>V4LVL</u> 0	<u>CHRS</u> 110 <u>V1PAN</u> 0 <u>V4PAN</u> 127

6	PCM70 SETUP6 SINGLE PROGRAM 61 MBAND	<u>MDLY</u>	<u>V2FDBK</u>	<u>MLVL</u>	<u>DIFF</u>
		127	128	127	0
		<u>V1DLY</u>	<u>V1FDBK</u>	<u>V1LVL</u>	<u>V1PAN</u>
		214	66	255	127
7	PCM70 SETUP7 DOUBLE PROGRAM 62 MBAND	<u>MDLY</u>	<u>V2FDBK</u>	<u>MLVL</u>	<u>DIFF</u>
		127	51	127	0
		<u>V1DLY</u>	<u>V1FDBK</u>	<u>V1LVL</u>	<u>V1PAN</u>
		130	51	255	0
8	PCM70 SETUP8 SHUFFLE PROGRAM 68 MBAND	<u>MDLY</u>	<u>V2FDBK</u>	<u>MLVL</u>	<u>DIFF</u>
		127	51	127	0
		<u>V1DLY</u>	<u>V1FDBK</u>	<u>V1LVL</u>	<u>V1PAN</u>
		130	51	255	0
9	PCM70 SETUP9 MAJOR PROGRAM 71 RESCHORD	<u>MDLY</u>	<u>RESON</u>	<u>MLVL</u>	<u>PITCH</u>
		127	127	127	127
		<u>V3FDBK</u>	<u>V6FDBK</u>	<u>HFCL</u>	<u>HFGR</u>
		0	0	204	204
10	PCM70 SETUP1 CONCERT PROGRAM 81 HALL	<u>PTCH1</u>	<u>PTCH2</u>	<u>PTCH3</u>	<u>PTCH4</u>
		13	37	0	68
		<u>RTLOW</u>	<u>RTMID</u>	<u>SIZE</u>	<u>PDLY</u>
		156	106	255	12
11	PCM70 SETUP11 CHAMBER PROGRAM 91 CHAMBER	<u>XOVR</u>	<u>HICUT</u>	<u>MLVL</u>	<u>MDLY</u>
		17	170	127	127
		<u>RTLSTP</u>	<u>RTMSTP</u>	<u>GATE</u>	<u>DIFF</u>
		57	57	255	151
12	PCM70 SETUP12 TILEROOM PROGRAM 93 CHAMBER	<u>RTLOW</u>	<u>RTMID</u>	<u>SIZE</u>	<u>PDLY</u>
		222	172	109	0
		<u>XOVR</u>	<u>HICUT</u>	<u>MLVL</u>	<u>MDLY</u>
		59	127	127	127
13	PCM70 SETUP13 GATED PROGRAM 94 CHAMBER	<u>RTLSTP</u>	<u>RTMSTP</u>	<u>GATE</u>	<u>DIFF</u>
		164	164	255	123
		<u>RTLOW</u>	<u>RTMID</u>	<u>SIZE</u>	<u>PDLY</u>
		222	222	83	13
14	PCM70 SETUP14 INFVERB PROGRAM 95 INFVERB	<u>XOVR</u>	<u>HICUT</u>	<u>MLVL</u>	<u>MDLY</u>
		59	204	127	127
		<u>RTLSTP</u>	<u>RTMSTP</u>	<u>GATE</u>	<u>DIFF</u>
		0	0	4	164
15	PCM70 SETUP15 PLATE PROGRAM 101 PLATE	<u>RTIME</u>	<u>FXADJ</u>	<u>SIZE</u>	<u>PDLY</u>
		231	175	255	0
		<u>ATTACK</u>	<u>HICUT</u>	<u>MLVL</u>	<u>MDLY</u>
		20	212	127	127
16	PCM70 SETUP16 ECHORUS PROGRAM 52 CHO&ECHO	<u>L1REL</u>	<u>R1REL</u>	<u>DEF</u>	<u>DIFF</u>
		0	0	0	126
		<u>RTLOW</u>	<u>RTMID</u>	<u>SIZE</u>	<u>PDLY</u>
		131	131	104	0
17	PCM70 SETUP17 PLATE PROGRAM 102 PLATE	<u>XOVR</u>	<u>HICUT</u>	<u>MLVL</u>	<u>MDLY</u>
		34	221	127	127
		<u>RTSTP</u>	<u>RTMSTP</u>	<u>GATE</u>	<u>DIFF</u>
		0	0	255	224
18	PCM70 SETUP18 ECHORUS PROGRAM 53 CHO&ECHO	<u>MDLY</u>	<u>MFDBK</u>	<u>MLVL</u>	<u>CHRS</u>
		127	127	127	167
		<u>V1DLY</u>	<u>V1FDBK</u>	<u>V1LVL</u>	<u>V1PAN</u>
		70	0	0	76
19	PCM70 SETUP19 ECHORUS PROGRAM 54 CHO&ECHO	<u>V4DLY</u>	<u>V4FDBK</u>	<u>V4LVL</u>	<u>V4PAN</u>
		238	153	131	0

PCM-70 Software Variations

The behavior of the PCM-70 with the MRC differs slightly, depending on which version of software is installed in the PCM-70. The most important point to note is that the PCM-70 will not function with the MRC at all with a software version lower than 2.00, at which time System Exclusive was implemented. (This software became standard for all PCM-70 units shipped as of late 1986.)

To determine which version of software is installed in your PCM-70 turn the unit off, then on, and observe the message displayed during power up. If the version number is lower than 2.00, you will need to update your software to either 2.00 or 3.01 in order to use the MRC. This can be done through your dealer (for 3.01), or Lexicon Customer Service (for 2.00).

Assuming that your PCM-70 is MRC-compatible, it is important to note that there are potentially significant differences in behavior between PCM-70s with software version 2.00 and those with version 3.01. These relate to the manner in which the MRC controls the selection of processing algorithms on the PCM-70, and the way in which PCM-70 setups are stored in the MRC.

The term "algorithm" in this context refers to the type of reverberation or effect that is in use (Plate, Hall, Multiband Delay, etc.) PCM-70 version 2.00 has seven such program types, version 3.01 has eight.

The PCM-70 has three modes of response to MIDI program change messages: OFF, FIX and TBL. This parameter is set in PCM-70 Program 7.0 Control Program, at parameter position 1.2. (Refer to the PCM-70 Owner's Manual for information on setting parameters on the PCM-70.)

In PCM-70 TBL Mode the program change numbers are mapped into a reference table, so that any MIDI program change message can call up any PCM-70 factory preset or User register. This provides great flexibility, but requires careful system management by the user to insure the desired results.

For most applications, the FIX mode is recommended because it puts the PCM-70 factory-preset programs in consistent locations, starting at #50 and going up by 10 for each row. This means, for example, that you can always find a program which uses a Chorus & Echo type of algorithm in locations 51-60, as shown in the following chart.

Register	0.0	=	1
	1.0	=	11
	2.0	=	21
	3.0	=	31
	4.0	=	41
Program			
	CHO&ECHO	=	51-60
	MULTI-BAND DELAY	=	61-70
	RESONANT CHORDS	=	71-80
	CONCERT HALL	=	81-90
	CHAMBER	=	91-94
	INFINITE REVERB	=	95 (V. 2.00)
			98 (V. 3.01)
	PLATE	=	101-110
	INVERSE ROOM	=	111 (V. 3.01 ONLY)

The factory presets on the MRC assume that you are using PCM-70 FIX mode. When selecting an algorithm in MRC Setup Edit Mode, a default program change number is assigned to correspond to a factory-preset program of that algorithm on a PCM-70 operating in FIX mode. Although this number can be changed, if desired, in the normal course of editing MRC Setups, it is important to enter a program change number that will call up an appropriate algorithm on the PCM-70, or the sounds achieved will have little to do with the information displayed on the MRC.

Another reason for paying close attention to the program change number is that the MRC only adjusts 12 out of the 30 or more parameters on the PCM-70. The remaining parameters retain the values associated with that program or register (unless they are altered at the PCM-70 panel.) This means that, depending on the program change number and the contents of PCM-70 memory at that location, the results of the same MRC Setups might be considerably different.

Because PCM-70 version 3.01 has different factory-preset programs than version 2.00, the settings of the parameters which are not addressed by the MRC are different in each version. These differences are often insignificant, but the situations in which recognizable differences occur are summarized below.

Setup #	Setup Name	
2	CHR ECHO	V. 301 has later delays panned to right
3	SFLANGE	Flange is more pronounced in V. 301
4	DBLESLAP	V. 3.01 produces decaying echo panned to right, rather than slap echo
5	ECHO BPM	V. 3.01 is weighted toward left
6	SINGLE	V. 3.01 produces multi-tapped delay
7	DOUBLE	V. 3.01 has less bass
8	SHUFFLE	V. 3.01 comes up as an all dry sound
14	INFVERB	V. 3.01 comes up as a Chamber program
15	PLATE	V. 3.01 produces longer decay time
16	ECHORUS	V. 2.00 produces low frequency feedback on right side

When creating your own setups on the MRC it is recommended that you first select a PCM-70 factory-preset program, or User register, as a starting point and enter a program change number corresponding to that memory as part of the PCM-70 setup to insure that the rest of the parameters will be set as desired when the program change number is called.

The following procedure will assure proper communication between the MRC and the PCM-70.

On the PCM-70:

1. Load CONTROL PGM 7.0
2. Set OMNI mode to: OFF
3. Select proper MIDI channel number.
4. Set PGM CHNG to: FIX

On the MRC:

The program number selected must match one of the PCM-70's MIDI program numbers (51-120)

For example: When PGM CHNG is set to FIX, MIDI program number 51 corresponds to PCM-70 front panel program 0.0, which uses the CHORUS & ECHO algorithm.

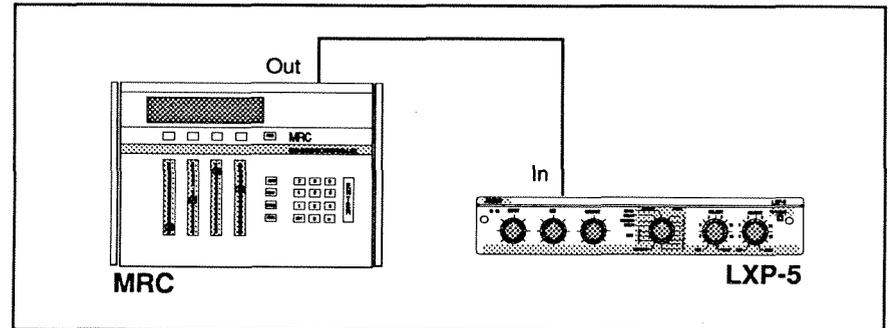
NOTE: The PCM-70 powers up to where it was when powered down. If you change the program at the PCM-70 to a new algorithm without changing the MRC, it will put the units into unlike algorithms.

In such a case, the MRC will not be transmitting data which is recognizable to the PCM-70, and incorrect changes (or no changes) may occur.

7. Controlling the LXP-5

The MRC provides quick, convenient control of the LXP-5. All processing parameters of the LXP-5 can be adjusted easily, with accurate display of all parameter values. The MRC also lets the user control the real-time modulation features of the LXP-5 in a simple, straightforward fashion.

Connection of the MRC to the LXP-5 requires only a standard MIDI cable, connected as shown. To start with, use Output 1 on the MRC.



Once the LXP-5 is connected, put the MRC into Machine Select Mode. (If you are not sure how to do this, just press the MACH button twice. This will return the MRC to Machine Select Mode from any other mode.)

Use the leftmost slider (Slider 1) to scroll, the MACH button to step, or the keypad to select an LXP-5 type machine from the list of installed devices. (When shipped from the factory, and first turned on, the MRC will display Machine #3 as an LXP-5 with MIDI Channel 1 selected.)

Pressing ENTER will put the MRC into LXP-5 Run Mode, with the first page of processing parameters shown on the display.

Establishing communication

If this is the first time that this LXP-5 has been connected to this MRC, the LXP-5 is likely to be in a state other than that shown on the MRC display. To establish communication between the two units, first, verify that the LXP-5 is listening to the correct MIDI channel. To do this, move Slider 1 on the MRC until you see the displayed values begin to change. (If the System Parameter: Slider Nulling is turned ON, you may have to move the slider to an extreme of its range before this occurs.) While moving the slider, look at the LXP-5 to see if the front panel LEARN LED is flickering. If it is, the LXP-5 is receiving MIDI data on the correct channel.

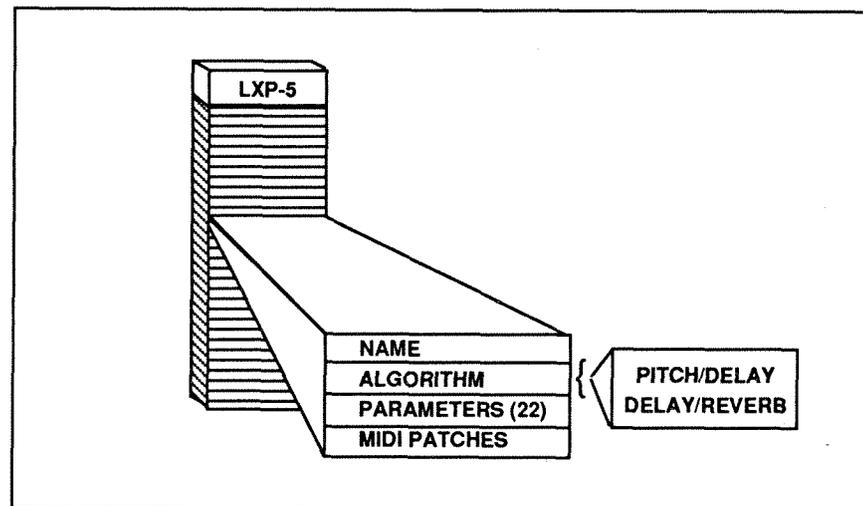
If the LED is not flickering, hold in the LXP-5 front panel LEARN button while moving Slider 1 on the MRC. This causes the LXP-5 to switch to the channel designated by the MRC. (This procedure assumes that you wanted to set the LXP-5 to the MIDI channel designated by the MRC. If you want to assign a different channel for MRC control of the LXP-5, refer to Section 2: Machine Edit Mode.)

Next, press the asterisk (*) key on the MRC keypad once. This quickly transmits all the values currently held in the MRC's temporary memory. Now you can proceed with confidence that the MRC and LXP-5 are in sync with each other.

Once communication is established between the two units, simply select the LXP-5 from the MRC machine list, and press ENTER.

LXP-5 Setups

LXP-5 machine types have a bank of 64 user-programmable memories. (When the MRC is shipped, the first 32 of these setup memories are loaded with useful presets.) Each of these memories stores a complete LXP-5 sound, including MIDI patches or internal modulations. These memories are referred to in the MRC as *setups*.



To choose a setup, first press SETUP.

Then select a specific setup by pressing the SETUP key repeatedly, by moving Slider 1 to scroll through all the setups, or by entering a keypad number.

Press ENTER.

The LXP-5 will now be loaded with a new sound, and the appropriate parameter values will be displayed on the MRC.

Viewing and Editing Parameters

The MRC uses seven display *pages* to indicate the processing state of the LXP-5. Display pages can be selected by pressing the PAGE key repeatedly to step through the pages, or by entering the number of the desired page on the keypad. The PAGE key will probably be most useful at first, but once you become familiar with the page contents, you may find it faster to enter the number of the page with the parameter you want.

The LXP-5 has two different processing algorithms: Pitch/Delay and Delay/Reverb. Most of the parameters are the same in either algorithm. The following chart shows the parameters for each algorithm, and the differences between them.

LXP-5 Algorithms

Pitch/Delay Slider 1 Slider 2 Slider 3 Slider 4

Page 1	Mono Delay	MDELAY 0-1040.3ms	FINE	MFDBK 0-100%	
Page 2	Pitch Shift	PITCH OFF, -2 Oct to +1 Oct	FINE	LDLY 0-322ms	LFDBK 0-99%
Page 3	Filters & LFO	HICUT 0.3K-15.0K	LOCUT 0Hz-1.35K	LFO-RATE 0.1Hz-2.0Hz	
Page 4	Stereo Delay	LDELAY 0-322.5ms	FINE	RDELAY 0-322.5ms	FINE
Page 5	Reverb Envelope	RLVL DRY-100%	RTIME 0.6s-6.1s	SIZE 8.0m-26.4m	DIFF 0-100%
Page 6	Reverb Tone	TDECAY 0.3K-15.0K	BASS x0.3-x2.5		
Page 7	Levels	PAN <100%-100%>	INPUT 0-100%	OUTPUT 0-100%	

Delay/Reverb Slider 1 Slider 2 Slider 3 Slider 4

Page 1	Delay	DELAY 0-630.7ms	FINE	FDBK 0-100%	
Page 2	N/A	PITCH N/A THIS ALGO			
Page 3	Filters & LFO	HICUT 0.3K-15.0K	LOCUT 0Hz-1.35K	LFO-RATE 0.1Hz-2.0Hz	
Page 4	N/A	STEREO DELAY N/A THIS ALGO			
Page 5	Reverb Envelope	RLVL DRY-100%	RTIME 0.6s-6.1s	SIZE 8.0m-26.4m	DIFF 0-100%
Page 6	Reverb Tone	PREDLY 0-176.6ms	FINE	TDECAY 0.3K-15.0K	BASS x0.3-x2.5
Page 7	Levels	PAN <100%-100%>	INPUT 0-100%	OUTPUT 0-100%	

Note that Delay/Reverb lacks two of the pages available in Pitch/Delay (page2-Pitch and page4-Stereo Delay). These were deliberately formatted as blank pages to keep most of the pages at the same numeric locations. If you select these pages for a setup using the Delay/Reverb algorithm, the MRC will simply inform you that they are not available.

Using the PAGE key, move about the pages, using the sliders to change parameter values, and listen to the results. You'll find it very fast to program the LXP-5 in this fashion.

Storing and Editing Setups

When you want to store a sound you've created, simply press STORE. The MRC will allow you to write the edited sound into its current setup location (overwriting the previous contents), store to a new location in the MRC, or store it into the LXP-5.

To store the sound into a new location in the MRC, simply enter a number between 32 and 64 on the keypad, and press ENTER. (Numbers 1-32 are available too, if you don't mind writing over one of the presets.) Slider 1 can also be used to select a setup number. If you accidentally enter a number higher than 64, the MRC will tell you when you try to store it. If you decide against storing the sound before you press ENTER, press MACH to abort the operation.

Setup Edit Mode

Several important functions are grouped together in Setup Edit Mode. Selection of a processing algorithm, editing of Dynamic MIDI® Patches or LFO Modulation, and the renaming of setups are all performed here.

To enter the Setup Edit Mode, go to LXP-5 Run Mode, and press EDIT. The display will show the first of the edit mode pages.

Select the Processing Algorithm

On the first edit mode page, either "DLY/RVB" or "PTCH/DLY" should be shown in the lower right part of the display. (If you don't see this, press PAGE a few times. If you still can't find it, you're lost — press MACH twice to get to Machine Select Mode, and start over.) The rightmost slider (Slider 3) or the pushbutton directly above it allow you to switch back and forth between these two algorithms.

This is the only way to select an algorithm, other than by selecting a setup that already uses the algorithm you want. Since it gets to be difficult to recall which setups use which algorithm, it's usually easier to do it here.

Editing Dynamic MIDI® Patches

This part of the LXP-5 is very powerful, but also complex. You may need to refer to the LXP-5 Owner's Manual.

MIDI patches are addressed by four pages of controls in the LXP-5 Setup Edit Mode. (The first of these pages immediately follows the page on which you set the processing algorithm.)

Each page provides for selection of four parameters that define the response of the LXP-5 to an external MIDI device, the LXP-5 front panel ADJUST knob, or the LXP-5's internal sweep generator (LFO). Each page allows the choice of a *Source* of modulation for that patch. The Source can be any MIDI controller: Note value, Velocity, Channel, After touch, Pitch Bend, MIDI Clock Tempo (especially useful to modulate delay times), the LXP-5 ADJUST knob, or its internal LFO. If you are not concerned with modulating your effect from a keyboard or other controller, or from the LXP-5 front panel (since you have an MRC), the LFO is probably the most interesting source of modulation.

To select a Source, use Slider 1 to scroll through the available values, or use the button above Slider 1 to step sequentially through these values. The button is convenient because the number of possibilities makes it difficult to zero in on what you want with the slider. However, if you use the button and step past what you wanted, you'll have to use the slider to back up and come at it again. Incidentally, you'll find LFO at the top of the slider's travel—which is very convenient.

Once you select a Source, try using the third slider from the left (Slider 3) to pick a *Destination* of modulation. These are processing parameters on the LXP-5 that can be varied in real-time. All LXP-5 parameters appear on the MRC display, as well as SCALE 1, 2, 3, and 4. Parameters which are not available are indicated on the MRC display by a dashed line.

Note: The SCALE parameters are provided to allow you to control the depth of one patch or modulation, with another. For instance, you can use the first MIDI patch to connect the LFO to Pitch Shift (PTCH-C or PTCH-F), then use Patch 2 to direct a Modulation Wheel (MODWH) to vary SCALE 1. This lets you introduce vibrato by moving the Mod Wheel, just like a synth.

Once a Source and a Destination are chosen, Slider 3, or Pushbutton 3, can be used to *Scale* the amount of modulation. The available range of positive scaling is 0% to 200%; negative values appear once the value exceeds 200%, starting with -200% and decreasing as the slider is moved up. Negative values mean that the targeted parameter will decrease as the controller value increases. This is most useful when more than one parameter is assigned to the same controller, allowing you to create complex changes in the sound with a single control move.

Slider 2 allows you to assign *Threshold*. This is a value which the designated Source must exceed before it has any effect. This can be quite useful when you get to know the capabilities of the MIDI patches, but can most often simply be left at zero.

Once a set of patches has been created, it can be stored with the setup, and will be in place whenever that sound is selected.

Rename Setup

Following the Dynamic MIDI® edit pages are two pages of controls which allow you to give your setups distinctive names. (When an edited setup is stored into the MRC, it initially has the same name as the original setup.) Each page allows four characters of an 8-character name to be edited using the sliders and pushbuttons. Use the buttons to step through the available characters — if you overshoot, use the slider to get back “underneath” the desired character.

Exiting the Setup Edit Mode

Once you have all the pages the way you want them, press ENTER. The display will prompt you to ask if you want to store the edits (Press “1” if you do.) Note that if you press “0” (“no”) the MRC will return to LXP-5 Run Mode, with every appearance of having retained the new edits. Your new MIDI patches and names, however, will not have been stored in the Setup memory at all, so take care!

You can also exit Setup Edit Mode by pressing MACH. In this case, the LXP-5 will retain any changes made to the MIDI patches, but the MRC display won't! If you want to reset the LXP-5 to the patches now shown on the MRC display, press the asterisk key.

Using the MRC with multiple LXP-5s

The MRC is designed to be able to control as many as sixteen Lexicon devices at once, keeping track of the state of each machine at all times. In order to do this, it is necessary to edit the list of devices in the Machine Select menu to reflect the configuration of units in use. (See Section 2: Machine Edit Mode.)

Each LXP-5 must be assigned to a different MIDI channel, or connected to a different MRC MIDI output. (There are two.) An LXP-5 can share the same MIDI channel as an LXP-1, but should *not* be on the same channel as a PCM-70. (The PCM-70 uses Program Change messages that may cause unwanted changes in the state of the LXP-5.)

The 64 setup memories available for the LXP-5 machine type, are shared among all LXP-5s in use. — Any LXP-5 can use any of the 64 setups, but there are not separate memories dedicated to each unit.

8. Generic MIDI Control

Generic MIDI (GMIDI) is the most flexible and powerful of the MRC's operating modes — and because of its broad nature and the differing characteristics of the equipment it might be used with, it is also the most complex. With the following overview, however, you can quickly gain an understanding of this powerful mode of operation, and put it to work with virtually any MIDI equipment.

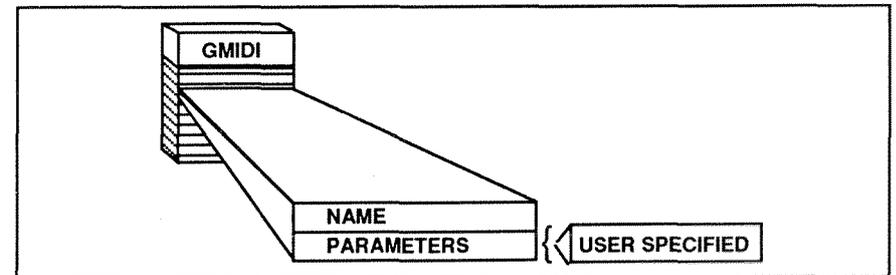
(If you need an introductory explanation of MIDI, we strongly recommend you refer to one of the many excellent texts that have been published for this purpose.)

GMIDI Overview

In GMIDI Mode, the MRC becomes a completely assignable remote controller for virtually any MIDI device, or any combination of MIDI devices.

A GMIDI Setup is fundamentally different from a setup for the LXP-1, PCM-70 or LXP-5, which contains parameter value information that is transmitted to the target device when the setup is selected. In GMIDI, a setup primarily defines what *kind* of messages will be sent by each slider and button.

There are 10 GMIDI setups available in all, shared by all machines designated as GMIDI.



Each GMIDI setup has four pages of controls, as shown below

Page 1 (Sliders)	SLR1	SLR2	SLR3	SLR4
Page 2 (Sliders)	SLR5	SLR6	SLR7	SLR8
Page 3 (Switches)	SWT1	SWT2	SWT3	SWT4
Page 4 (External Inputs)	EXT1	EXT2		

This makes a total of 14 different physical controls that need to be defined for a complete GMIDI setup. Switches 1-4, and External Inputs 1 and 2 remain active all the time that a GMIDI setup is running. Sliders, however, are only operable when their particular page is being displayed.

Each slider, switch and external input can be configured to transmit one of the types of MIDI messages shown.

MRC GMIDI Transmit Messages
MIDI Controllers 0-120
Pitch Bend
Channel Aftertouch
Note On/Off
Program Change
Non-Registered Parameters, Coarse
Non-Registered Parameters, Fine
Registered Parameters, Coarse
Registered Parameters, Fine
All Notes Off
Sequencer Start, Stop, or Continue
Song #
A 10-byte System Exclusive message

When you consider that each of these messages has its own variations, the number of possible configurations becomes enormous. On top of that, the actual response of a MIDI system to these messages is determined entirely by the configuration (and programming) of the units in that system. So, a GMIDI setup that is appropriate in one situation may not be in another.

A GMIDI setup also contains an optional leading Program Change message which is transmitted with the setup. This ensures that the target device is in the proper state to make use of the messages transmitted by that setup.

Unlike setups for the other machine types, a GMIDI setup is not automatically transmitted when selected — we decided to let you make that decision. If you want to transmit the initial values of a GMIDI setup, simply select the setup, then press the asterisk (*) key. If the setup contains any messages of the following types, they will be transmitted: leading Program Change (if enabled), Continuous Controllers, Pitch Bend, Aftertouch, Registered and Non-Registered Parameter Adjust, and SysEx.

NOTE: Each external input can be used with either a volume pedal or a footswitch. When used with a volume pedal, it acts like one of the sliders. When used with a footswitch, it acts like one of the switches. In either case, the System Parameter: *External Input Mode* for that input must be set to NORMAL to be used with a GMIDI setup. (See Section 3: *System Parameters* for a discussion of the connection requirements of the external inputs.)

Selecting and Using a GMIDI Setup

A few preset GMIDI setups are provided with the MRC when shipped from the factory. These presets are likely to prove useful in a number of real-life situations, and they also serve well to illustrate the construction of GMIDI setups.

An Example

To get started, first go to Machine Select Mode (press MACH twice), and select a GMIDI type machine by using Slider 1, the MACH button, or by entering the machine number on the keypad. (When shipped, the MRC has Machine #4 set as GMIDI. — If you can't find any machine of that type on your MRC, refer to Section 2: *Editing Machines*.)

Once you have selected a machine of GMIDI type, press ENTER.

A display with some numbers and labels on it will appear — for the moment, ignore this display, and press SETUP. This brings up a display which lists any GMIDI setups that have been installed. Pressing SETUP repeatedly will send you through this list; Slider 1 allows you to scroll through the list.

On the keypad, enter "0", then enter "1". The right-hand portion of the display should read "MIXER-8". (If it does not, this preset has been edited out of the MRC you are using. See the end of this section for the information you need to re-install this preset. — For now, we assume that this setup is available.)

Press ENTER and the following display will appear.

VOL1	VOL2	VOL3	VOL4
127	127	127	127

This is the first of the four pages of this setup.

You can move each slider, and see the numbers change. (If System Parameters: *Slider Nulling* is ON, you will have to move each slider to its stored "null" point before the values will begin to change. If you wish to change this, refer to Section 3: *System Parameters*).

Press the PAGE key to step to the next page in sequence. The display will show Sliders 5-8, labeled as VOL5, 6, 7, and 8.

This setup lets you change the balance of a number of simultaneously running MIDI modules. The eight sliders (four on each of two pages) are each configured to transmit a MIDI Volume command (MIDI Controller #7) on a different channel. Slider 1 transmits on MIDI channel 1, Slider 2 on channel 2, etc.

This is especially useful when the modules are being controlled by a sequencer, because the MRC output can be recorded as part of the sequence. (Automated mixdown!) This setup is even more useful when using a Music Workstation, because it lets you adjust the balance between tracks of the sequence while the sequencer is playing, which may not otherwise be possible.

Page 3 shows the switches labeled STRT, STOP, CONT, and NOTE. The first three of these can be used to control a sequencer that responds to these messages. (Certain sequencers only use these messages when they are being clocked externally.) Note that the switches are *always* active when this setup is running, regardless of which page is being displayed.

On Page 4, you will see EXT1 and EXT2, designating the 2 external inputs. These two controls are not assigned in this particular setup.

Pressing PAGE again will take you back to Page 1. You can also go directly to any of the pages by pressing 1-4 on the keypad. This is especially useful for toggling between the two pages of sliders.

Another Useful Setup

Press the SETUP key, then press "2" on the keypad. The setup name in the right part of the display should read "ORCHES-4".

Press ENTER.

This setup is intended to help you organize sounds for a group of synthesizer modules, either for sequencing or live playing. The first page of controls assign each slider to sweep through all available MIDI Program Change messages on one channel (Slider 1 on Channel 1, and so on). If connected to a synthesizer or sampler, this slider can be used to quickly audition the sounds in that module. The switches are assigned to trigger a Note-On at moderate velocity level on the corresponding MIDI Channel. This makes it convenient to test the sounds selected.

If four modules, assigned to MIDI Channels 1-4, are connected, you can use all four sliders to pick different sounds for each. If the MRC is patched through a sequencer (or the sequencer is patched through the MRC), you can select sounds while the sequence is playing. It can be very interesting to create different "orchestras" for the same piece of music.

The second page of sliders provides four MIDI Volume controls, as in the previous setup. These can be used to adjust the balance of different voices. This setup can be used to quickly adjust the programs and balances of a group of synthesizer modules (or samplers, or effects units).

Introduction to GMIDI Setup Editing

We'll use Setup 2 (ORCHES-4) to show you how to create and edit GMIDI Setups. After selecting Setup 2, press EDIT. The following display will appear.

SOURCE	DEST	(CH#)	(OUT#)
slr1	PGMCH	1	1

The first column (SOURCE) indicates which of the fourteen controls is being viewed or edited. (slr1 is Slider 1.)

The second column (DEST) shows what type of MIDI message is being transmitted. In this case, it's a MIDI Program Change.

The third column (CH#) shows which MIDI Channel that message is to be transmitted on.

The last column (OUT#) designates which of the MRC's two outputs will be used to transmit the designated message.

Press Switch 1. The SOURCE column will change to slr2 (Slider 2). The DEST message type remains the same, but the MIDI channel number in column 3 changes from "1" to "2". OUT# remains "1". This indicates that Slider 2 will be transmitting Program Change messages on MIDI channel 2, Output 1.

Press Switch 1 again to call up Slider 3, and again to look at Slider 4. You can see that each of these is designated as a Program Change message type on a different MIDI Channel. When you get to slr5 (on the second page of sliders), the DEST type changes to CTRL, indicating a MIDI Continuous Controller Message, and the MIDI channel is number 1 again.

In this mode, you can also use Slider 1 to scroll through all of the possible controllers as well as the setup label and the optional Program Change. Take a few minutes to look at the various controls, and to get a feeling for the organization of the setup.

Now we'll look at the programming of this setup in more detail, and practice some editing. Bring Slider 1 back to the bottom of its range. As you may have realized, this page does not contain quite enough information to fully define the transmission from the slider while this setup is running. Which Program Change messages are to be transmitted? All of them? Just one? Pressing the PAGE key once will bring up the next level of information concerning this slider's programming. In the case of a Program Change message, this information consists of a LO and HI numeric value that define the range of values (Programs in this case) to be transmitted when the slider is moved. At the bottom of its range, the slider will transmit MIDI Program Change 1, at the top, Program Change 128 will be sent.

Since 128 different programs may be more than you wish to use on this slider, we'll reprogram this slider to cover a narrower range.

Move Slider 2 down to the lower part of its range, and set the HI value displayed to "16". You may find it a little difficult to zero in on the value with the slider. If so, just put the value somewhere below 16, then use the switch to step to the correct value.

If you want to test out the effect this edit has on the operation of the control, hold down the asterisk key, and move the slider. You'll see that the range of numbers is now 1-16, and if you have a synth or other device connected, you'll hear the results. This operation can be done at any time during the edit procedure, and is extremely useful to verify that the setup being created will do what you want it to.

Now press the PAGE button again. This page lets you assign a 4-character label to the slider. Try using the sliders and switches to assign a new label. This can be anything you want. — Try changing it to "PG16", or "1-16".

Press PAGE again to return to Page 1 (SOURCE - DEST- CH# - OUT#).

Use Slider 1 or Switch 1 to select Slider 2 for editing. This time, we'll change the *type* of message to be transmitted.

Use Slider 2 or Switch 2 on this page to look at the available destinations, then select "CTRL" (MIDI Continuous Controller) which is next-to-the last on the list. (The easiest way to select this is to move Slider 2 to the very bottom, then hit Switch 2 once to step up.)

Next, change the CH# to 1 (or any channel that suits your own purposes).

Press PAGE to select what kind of Controller will be transmitted.

Slider 1 or Switch 1 on this page lets you choose one of 120 possible controllers. Most of these have numbers only; those controllers defined in the MIDI specification are displayed by name. After you examine the possibilities, select "VOLUME" (7th from the bottom).

Sliders 2 and 3 on this page determine range of operation. In the case of MIDI Volume, 0-127 is generally appropriate, but you can experiment to see how the values change. Use the asterisk key, as described earlier, to try out the settings, and to get a feel for the operation. Notice that if Slider 2 (LO) is set to a value higher than that for Slider 3 (HI), the control will work in reverse. You may also wish to experiment with the SLOPE control on Slider 4. (You can choose from a standard LINear slope, LOGarithmic, or ANTILogarithmic slope) Then go to the next page and label this slider "VOL1".

You can continue in this fashion, assigning the various controls on the MRC to different type. You might wish to examine the different kinds of information needed for each control type. Some of these, such as SysEx, are quite a bit different from the ones we've looked at already. These are covered in detail later in this manual. When you are done, go to the label for the whole setup (top of the travel of Slider 1 on the SOURCE-DEST-CH#-OUT# page) and make up an appropriate label to designate your new setup.

Exiting Setup Edit Mode

To exit the Setup Edit Mode, press ENTER. The display will ask if you want to store this edit. We recommend you *not* store this setup, since it will overwrite the preset. Instead, answer the prompt with the "0", which will return you to Run Mode *without* storing. Then, press STORE, and select a blank setup number (5-10) to store your edited setup. Another way to store the setup to a new location is to enter the desired setup number on the labeling page of the Setup Edit Mode, then exit by pressing STORE.

This should give you a good sense of how GMIDI setups can be created and modified. The trick to putting GMIDI to work for you consists mainly of looking at the equipment you want to control and determining what MIDI message that gear should respond to. Then you can think about what functions or group of functions would be useful for your purposes and program accordingly.

An exercise

Starting from the original MIXER-8 setup, create a new setup, labeled "MIXER-16" that transmits MIDI Volume commands on MIDI channels 9-16.

MIDI Registered and Non-Registered Parameters

The most recent versions of the MIDI specification include a new idea to "universalize" the programming of MIDI devices. Instead of a single Continuous Controller message, with a range of 128 values, three or four messages are sent in a burst. The first two messages determine what parameter will be adjusted, the next message(s) determine the value of that parameter. Two bytes of information are provided for the selection of parameter, and two for parameter values. This provides access to more than 16,000 different parameters, with similarly high resolution!

Two such message types have been defined by the MIDI Manufacturer's Association (MMA): *Registered* and *Non-Registered* Parameters. Registered Parameters message types are those agreed on by all members of the MMA. To date, Pitch Bend Sensitivity (00 00), Fine Tuning (00 01), and Coarse Tuning (00 02) have been designated as Registered Parameters. The category of Non-Registered Parameters allows individual manufacturers to decide what parameters to assign to what numbers.

The MRC (Version 3.0) can address both Registered and Non-Registered Parameters. Because of the wide range of addressable values, there is a separate control for Coarse (REG-C and NREG-C), and Fine parameter values (REG-F and NREG-F). In either case, the programmer has to specify the number of the parameter, which has a high and a low value, on the page after the SOURCE-DEST page. The only currently designated numbers for Registered Parameters are shown above; the numbers for any piece of gear that uses Non-Registered Parameters is determined by the manufacturer. Refer to the manufacturer's owner's manual for this information.

An Example

Non-Registered Parameters are only useful to the extent to which they are supported in the industry. As of this writing, few pieces of equipment in the field make use of Non-Registered Parameters, but more are on the way. One device that does use this concept is Eventide's H3000 Ultra-Harmonizer. The MRC's preset, Setup 3, uses Non-Registered Parameters to perform some useful functions with this piece of equipment, and is used as an example of the programming of these message types.

If you have an H3000, try connecting the MRC to it. On the MRC, call up Setup 3. On the H3000, select program number 102 (Dual Shift). Then experiment with the MRC sliders on pages 1 and 2. You should see a variation in the parameters for pitch shift, delay, feedback, and mix for each stereo channel. (If not, check to see if you're receiving on MIDI Channel 1, that you're on the correct program on the H3000, etc.)

You'll find that this setup lets you change the effect in a dynamic fashion that is impossible from the H3000's front panel. By changing pitch interval and feedback and delay together in real-time, some very dramatic effects can be achieved. You can also use MRC Switches 1 and 2 to change the direction of pitch shift up and down. (If you find one of the parameters hung-up at maximum value, try hitting Switch 1 once.) This illustrates one of the most powerful features of the MRC — the ability to group key parameters.

On the MRC, press EDIT to go into Edit Setup Mode, and take a look at the programming of this setup. You will see that each slider is assigned a message type of NREG-F (Non-Registered Parameter, Fine), and that each one has a different PARAM# assigned on the second page. The numbers used here come from the H3000's Owner's Manual. If you have this manual, try assigning the slider to different parameters. (Note that Eventide assigns parameters differently for each program, and you may get a little lost if you move the sliders while the H3000 is running a different processing algorithm.)

A minor difficulty will be encountered in programming Pitch Shift Interval. This parameter has a very broad range and high resolution, so it uses both the Coarse and Fine values of the Non-Registered Parameter message. The MRC can only transmit one of these from a slider. Because full control over pitch would require the use of two sliders, we limited the range of shift from this MRC setup to a little over a semitone. Switch 1 and Switch 2 are programmed to transmit a value for the Coarse parameter that corresponds to toggling the direction of pitch shift. Because of the way Non-Registered Parameters work, it is possible to inadvertently transmit a Coarse parameter value to one of the other parameters (delay, feedback, or mix), and push it out of range. If this happens, press Switch 1 to transmit a message to set the parameter back into range.

System Exclusive Control

The MRC allows the user to assign a MIDI System Exclusive message of up to 10 bytes length to any of the controls. One byte of the message can be a value that will change as the MRC control is moved. This is potentially an enormously powerful feature, but it depends very much on the MIDI System Exclusive implementation of the device the user wishes to control. Because there is almost no consistency in the messages used by different companies, it can be difficult to determine how to use this message type with a specific device.

The MRC's preset, Setup 4, uses System Exclusive messages to address some useful functions on KORG's M1. We'll use that setup to show how SysEx messages can be tailored for specific purposes.

If you have an M1, connect it to the MRC. On the MRC, select Setup 4. You'll notice that Slider 1 sends out standard Program Change messages to select a sound on the M1. After you choose a sound, press the EDIT PROG button on the M1. You can now use the other MRC sliders on pages 1 and 2 to adjust the brightness, attack and release time, and the effects section of the M1. You'll find this a very quick way to modify the M1's sounds.

Note, however, that the controls only work properly for those sounds on the M1 which are of the "Single" type. This is because the M1 uses different addresses for the parameters, depending on whether the mode is "Single" or "Double". You may also find it inconvenient to have to press the M1's EDIT PROG button every time a new sound is selected.

As an exercise, we'll add a couple of switches to the MRC setup to let you put the M1 into EDIT PROG mode remotely, and also to force whatever sound is selected into the "Single" mode of operation.

In MRC Setup Edit Mode, select the page that allows you to address Switch 1, and select the message type "SYSEX".

Go to the next page, and enter "F0 42 30".

Go to the next page, and enter "19 4E 03 00".

Go to the next page, and enter "NONE NONE F7". This is a Mode Change message in M1 System Exclusive (M1 Owner's Manual: page 125, number (20).

Label this switch "EDIT".

Assign Switch 2 a SysEx message of "FO 42 30 19 41 00 08 00 00 F7". This is a Parameter Change message for the M1 which addresses the Oscillator mode, forcing it into "Single" mode operation regardless of previous state. This is message (21) on page 125 of the M1's manual.

Label this switch "SNGL" and exit Setup Edit Mode, storing your newly improved setup. Try out the results.

If you want to experiment with other parameters on the M1, you'll need to refer to the M1 owner's manual. If you're familiar with hexadecimal notation, most parameter editing can be accomplished using the Parameter Change message used above, and the charts on pages 130 and 131 of the M1 manual. (For a *really* neat trick with the M1, see Section 9!)

GMIDI Presets**Setup 1: MIXER-8**

SOURCE	DEST	CH#	OUT#	CTRL#	LOW	HIGH	SLOPE	LABEL
slr1	CTRL	1	1	VOLUME	0	127	LIN	VOL1
slr2	CTRL	2	1	VOLUME	0	127	LIN	VOL2
slr3	CTRL	3	1	VOLUME	0	127	LIN	VOL3
slr4	CTRL	4	1	VOLUME	0	127	LIN	VOL4
slr5	CTRL	5	1	VOLUME	0	127	LIN	VOL5
slr6	CTRL	6	1	VOLUME	0	127	LIN	VOL6
slr7	CTRL	7	1	VOLUME	0	127	LIN	VOL7
slr8	CTRL	8	1	VOLUME	0	127	LIN	VOL8
swt1	START		1					STRT
swt2	STOP		1					STOP
swt3	CONT		1					CONT
swt4	NOTE	1	1	PITCH C4	VEL 90			NOTE
ext1	NONE							EXT1
ext2	NONE							EXT2

Setup 2: ORCHES-4

SOURCE	DEST	CH#	OUT#	CTRL#	LOW	HIGH	SLOPE	LABEL
slr1	PGMCH	1	1		1	128		PGM1
slr2	PGMCH	2	1		1	128		PGM2
slr3	PGMCH	3	1		1	128		PGM3
slr4	PGMCH	4	1		1	128		PGM4
slr5	CTRL	1	1	VOLUME	0	127	LIN	VOL1
slr6	CTRL	2	1	VOLUME	0	127	LIN	VOL2
slr7	CTRL	3	1	VOLUME	0	127	LIN	VOL3
slr8	CTRL	4	1	VOLUME	0	127	LIN	VOL4
swt1	NOTE	1	1	PITCH C4	VEL 90			TST1
swt2	NOTE	2	1	PITCH C4	VEL 90			TST2
swt3	NOTE	3	1	PITCH C4	VEL 90			TST3
swt4	NOTE	4	1	PITCH C4	VEL 90			TST4
ext1	NONE							EXT1
ext2	NONE							EXT2

Setup 3: EVENTIDE

SOURCE	DEST	CH#	OUT#	CTRL#	LOW	HIGH	SLOPE	LABEL
slr1	NREG-F	1	1		0	127	SLOPE	L-PT
	MSB-PARAM#-LSB							
	0 4							
slr2	NREG-F	1	1		0	127	LIN	L-DL
	MSB-PARAM#-LSB							
	0 5							
slr3	NREG-F	1	1		0	100	LIN	L-FB
	MSB-PARAM#-LSB							
	0 2							
slr4	NREG-F	1	1		0	100	LIN	L-MX
	MSB-PARAM#-LSB							
	0 0							
slr5	NREG-F	1	1		0	127	LIN	R-PT
	MSB-PARAM#-LSB							
	0 6							
slr6	NREG-F	1	1		0	127	LIN	R-DL
	MSB-PARAM#-LSB							
	0 7							
slr7	NREG-F	1	1		0	100	LIN	R-FB
	MSB-PARAM#-LSB							
	0 3							
slr8	NREG-F	1	1		0	100	LIN	R-MX
	MSB-PARAM#-LSB							
	0 1							
swt1	CTRL	1	1	D-ENT	0	0		P-UP
swt2	CTRL	1	1	D-ENT	127	127		P-DN
swt3	NONE							SWT3
swt4	NONE							SWT4
ext1	NONE							EXT1
ext2	NONE							EXT2

Setup 4: KORG M1

SOURCE	DEST	CH#	OUT#	CTRL#	LOW	HIGH	SLOPE	LABEL
slr1	PGMCH	1	1		1	128		PGM
slr2	SYSEX	1						FLTR
	DEFINE SYSEX BYTES 2-3			F0	42	30		
	DEFINE SYSEX BYTES 4-7			19	41	03	09	
	DEFINE SYSEX BYTES 8-9			00	F7			
slr3	SYSEX	1						ATTK
	DEFINE SYSEX BYTES 2-3			F0	42	30		
	DEFINE SYSEX BYTES 4-7			19	41	07	08	
	DEFINE SYSEX BYTES 8-9			00	F7			
slr4	SYSEX	1						REL
	DEFINE SYSEX BYTES 2-3			F0	42	30		
	DEFINE SYSEX BYTES 4-7			19	41	07	0E	
	DEFINE SYSEX BYTES 8-9			00	F7			
slr5	SYSEX	1						FX-1
	DEFINE SYSEX BYTES 2-3			F0	42	30		
	DEFINE SYSEX BYTES 4-7			19	41	0F	08	
	DEFINE SYSEX BYTES 8-9			00	F7			
slr6	SYSEX	1						MIX
	DEFINE SYSEX BYTES 2-3			F0	42	30		
	DEFINE SYSEX BYTES 4-7			19	41	0F	0F	
	DEFINE SYSEX BYTES 8-9			00	F7			
slr7	SYSEX	1						FX-2
	DEFINE SYSEX BYTES 2-3			F0	42	30		
	DEFINE SYSEX BYTES 4-7			19	41	11	08	
	DEFINE SYSEX BYTES 8-9			00	F7			
slr8	SYSEX	1						MIX
	DEFINE SYSEX BYTES 2-3			F0	42	30		
	DEFINE SYSEX BYTES 4-7			19	41	11	0F	
	DEFINE SYSEX BYTES 8-9			00	F7			
swt1	NONE							SWT1
swt2	NONE							SWT2
swt3	NONE							SWT3
swt4	NONE							SWT4
ext1	NONE							EXT1
ext2	NONE							EXT2

9. Dynamic MIDI®

The MRC is able to receive MIDI messages on its two MIDI inputs, and transmit very different messages in response. This capability can be used to translate one controller message into another in order to alter the MIDI channel, to use velocity to alter another parameter, to transmit Program Change in response to a MIDI Note, to translate a standard controller into a System Exclusive message, etc. In addition, external footpedals, used as control sources, are assignable to any transmitted MRC MIDI message, including control functions for Lexicon processors. The variety of potential applications is huge.

The MRC's mapping functions are implemented in a very powerful, versatile fashion. This flexibility can lead to extremely complex configurations, and to use it effectively, you must understand how messages are mapped on the MRC.

The Structure of Dynamic MIDI® in the MRC

Each MRC machine has a set of 4 MIDI *patches* associated with it. Each MIDI patch defines a MIDI message to which the MRC will respond, as well as the MIDI channel and MRC MIDI input on which the message will be accepted. Each patch is directed to *one of the controls defined by the setup currently assigned to that machine*. This is an important concept, and one that may be difficult to grasp at first. — Instead of the MIDI input message being mapped directly to an output message, it is directed to one of the physical controls associated with that machine (any slider, switch or external input on any Run Mode page). The actual MIDI message transmitted is determined by the machine type and its defined setups. These incoming MIDI messages will be acted upon even by machines which are not "running" on the MRC's display — as though all of the machines (up to 16 of them) were running at the same time, and the MIDI input messages were operating the sliders and switches.

The mapping of input messages is created at the level of the Machine Edit Menu. This requires you to program a patch in the Machine Edit Mode, then go into Machine Run, Setup Select or Setup Edit Mode for that device in order to determine the response to be transmitted. Although this is a little awkward (and you will get unexpected results if the setup for a machine is changed while a MIDI patch is in effect for that machine), there are important advantages to this approach. Not only can many different messages be received and translated simultaneously, but this approach is very memory-efficient, so more memory is available to store setups for LXP-1s, LXP-5s, PCM-70s and GMIDI.

Creating and Using MIDI Patches

MRC MIDI patch functions can be turned ON or OFF in Machine Select Mode: System Parameters, Page 8. Be sure these functions are turned ON before you start to program the patches, or you will get very frustrated. The patches themselves are created in Machine Edit Mode.

As an example, take a keyboard or some other device which can transmit a MIDI Modulation Wheel message. On the MRC, select Machine 4 (or another GMIDI machine), enter Run Mode, and choose Setup 2 (ORCHES-4). (If you don't understand this, refer to Sections 2 and 8 of this manual.) This setup assigns the slider to transmit either MIDI Volume or Patch Change commands.

Now, press MACH to return to Machine Select Mode, then press EDIT to go to Machine Edit Mode. Press PAGE until you see "PATCH 1 -SRC - CH# - OUT#" displayed (or enter "3" on the keypad). Now, use Slider 2 or Switch 2 to select the message type "MODWH". (Move the slider to the bottom, then press the switch once). Set the Channel# to the MIDI Channel your keyboard controller is transmitting on.

Press PAGE once.

Go to Slider 4 (DEST) and select "sl1.p1" (Slider 1, Page 1). In this setup (ORCHES-4), this slider is assigned to transmit MIDI Program Change messages on MIDI Channel 1. Press ENTER to exit Machine Edit Mode

Now, connect your keyboard's MIDI Out to MRC MIDI Input 1. If you like, connect the MRC MIDI Output 1 to the MIDI Input of the key board (or some other device that responds to a MIDI Program Change). Now, when you move the Mod Wheel, you'll have some pretty interesting results!. If nothing seems to happen, verify that the patch is programmed as described, that the machine is assigned the appropriate setup, that the MIDI Patches are enabled in MRC System Parameters, and that the keyboard is transmitting the Mod Wheel data. (You might find the MONITOR MIDI function in the System Parameters useful for this.)

With a narrow range of Program Change messages, you might find it useful to return to Machine Edit Mode, and use the LO and HI limits to restrict the range of effect.

Another Useful Patch

In MRC Machine Edit Mode, reassign Patch 1 to have a Source (SRC) of Data Entry Slider (D-ENT), or another controller on your keyboard controller. Choose the MIDI channel on which your controller is transmitting, and a DEST of "sl1.p2" (Slider 1, Page 2). This is a MIDI Volume Control on MIDI channel 1. Now your Data Entry Slider can be used to control the output level of another instrument.

Locate Patch 2, in MRC Machine Edit Mode, and assign it as D-ENT on the same MIDI channel, but give it a destination of "sl2.p2". Then go to Patch 3 and do the same, but assign a destination of "sl3.p2". Assign Patch 4 to "sl4.p2". Now, your Data Entry Slider acts as a "ganged" control, turning the Volume up and down on four MIDI Channels at once!

An exercise

Use Machine Edit Mode to make four new GMIDI machines. Assign two of these to the factory preset "MIXER-8". Assign the other two to the "MIXER-16" setup specified in the exercise Section 8. Now create four MIDI Patches for each of these machines, assigning Data Entry Slider on a single channel to each of the sliders on Page 1 of the first MIXER-8 machine, Page 2 for the second, and again for both machines assigned to MIXER-16. As a result, the Data Entry Slider will be patched to transmit MIDI Volume Control on every single MIDI channel — a master Volume!

Using MIDI Patches to Create Slider Groups

In GMIDI, the MRC can be programmed to send the output of a slider back into the MRC, rather than out through one of the MIDI Outputs. We'll use the results of the last exercise to show how this works. Create one more GMIDI machine. Select a BLANK setup, and go into Setup Edit Mode. Assign the first slider to Data Entry Slider (D-ENT) on the MIDI channel you used for the patches in the exercise above. Then, assign the OUT# of that slider to "in1". Give the slider the name "VOL", and give the setup the name "MASTER". Exit Machine Edit Mode.

Instead of transmitting a Data Entry Slider message from the MRC's output, this slider will now command the four other machines created in the previous section to transmit MIDI Volume messages, letting you control the volume of a whole set of keyboards or other instruments.

NOTE: It is possible to have a GMIDI slider end up being patched back to itself, or patched to another slider which is, in turn, patched to another slider which is patched back to the first slider. The results are very hard to predict, often resulting in "oscillation" of the MRC, with various sliders seeming to move on their own. Adventurous users may wish to experiment with this, but be warned, it's very easy to lose control! (No permanent harm will come to the MRC if this happens.)

A Useful Application with the KORG M1

MIDI Patches on the MRC can be used to add powerful new features to the KORG M1 Music Workstation.

Connect the MIDI Output of the M1 to MRC MIDI Input 1, then connect MRC MIDI Output 1 back to the keyboard. Create a new GMIDI machine, and select the factory preset setup "KORG M1". Go to Machine Edit Mode, and assign all four Patches to Sources of Velocity (VEL) on the M1's channel of transmission (Channel 1 will do well). Assign the Destinations of these as Sliders 1-4 on Page 2. Exit from Machine Edit Mode.

Select a sound on the keyboard, and put it into it's EDIT PROG Mode (this is required for the M1 to receive System Exclusive parameter messages). Now, as you play the keyboard, the dynamics of your playing are translated into messages to turn up the level and amount of the effects applied in the M1. If one of the effects is reverberation, the decay time will be turned up as well as the mix level — highly expressive! If you like, you can use Aftertouch as well, or change the System Exclusive messages to address other parameters. (See Section 8 of this manual.)

Using External Foot Controls with Lexicon Effects Processors

MRC MIDI Patches can be used to assign either of two foot controls (attached to the MRC external inputs) to vary any parameter of a Lexicon LXP-1, LXP-5, or PCM-70. To do this, it is necessary to go to Machine Select Mode: System Parameters, and set one, or both, external inputs to their PATCH mode. Then go to the MRC machine that corresponds to the Lexicon unit you want to control, and create a MIDI Patch with EXT1 or EXT2 addressing the slider that matches the parameter you want to control. The HI and LO parameters of the MIDI Patch can be used to regulate the range of control. Two or more patches to the same target device may be used to produce complex changes in the effects processing.

10. Operating Notes

In the event of operational problems, check the following to make sure the MRC is connected correctly to the target device, and to make sure that the device to be controlled is correctly set up to receive MRC control data.

1. Is the MRC sending data on the same MIDI channel on which the target device is receiving data?
2. Is the target device connected to and assigned to the correct MRC Output?
3. Is the MRC in the correct algorithm for the signal processor being controlled?
4. If operating in GMIDI mode, does the receiving device have a patch to route the control message you are sending to the desired variable?
5. The MRC's GMIDI/ START, STOP, CONTINUE and SONG # messages are System Common messages and are not channelized. They will control a drum machine, but some sequencers will not respond to these commands unless set up to do so. This is because the sequencer, on receipt of these commands, generally requires a MIDI clock, which is not available on the MRC. (See the operating instructions for your sequencer to set the unit up to receive these commands.)

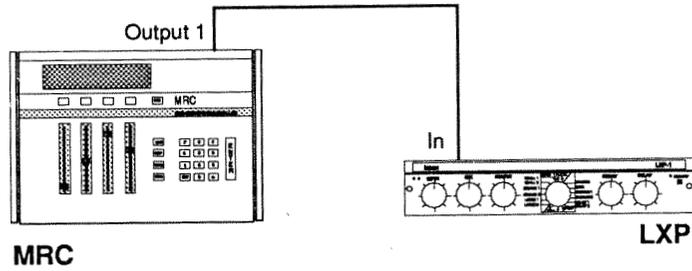
11. Application Notes

Sample System Configurations

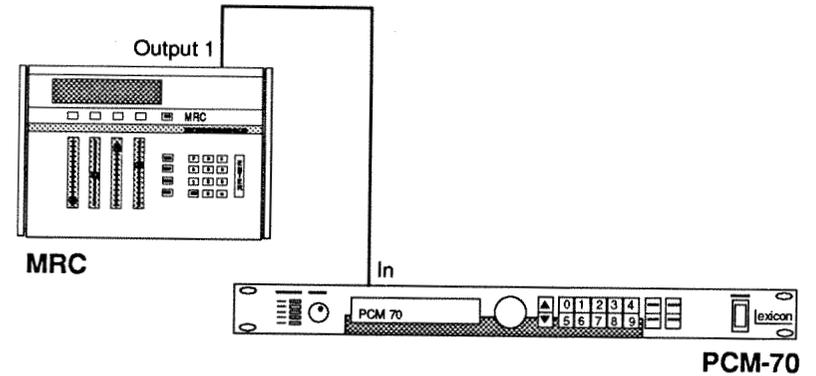
The MRC's versatility allows you to control not only any MIDI device, but nearly any *combination* of devices. This section presents a sampling of some basic configurations to indicate the range of possibilities that are now open to you.

These sample configurations are presented in the order listed below.

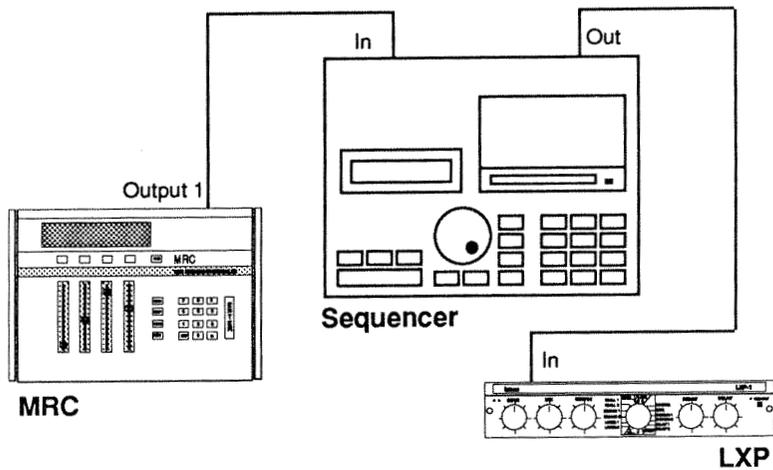
1. Simple control of the LXP-1 or LXP-5 from the MRC.
2. Using the MRC to control and automate the LXP-1 or LXP-5 by storing System Exclusive data change in a sequencer.
3. Controlling the PCM-70 from the MRC.
4. Controlling an LXP-1 or LXP-5 and a PCM-70 from one port of the MRC.



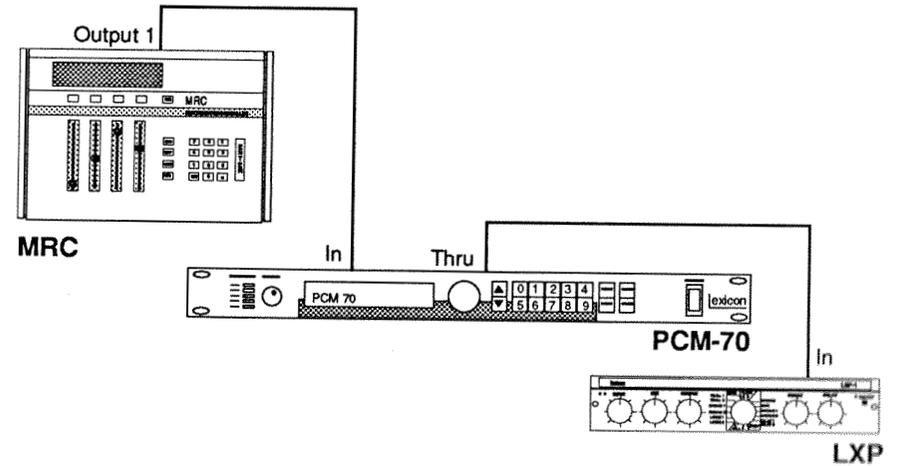
1. Simple control of the LXP from the MRC.



3. Controlling the PCM-70 from the MRC.



2. Using the MRC to control and automate the LXP by storing System Exclusive data change in a sequencer.



4. Controlling an LXP and a PCM-70 from one MRC port.

12. MIDI Implementation Data

Function	Transmitted	Recognized	Remarks
Basic Default Channel Channel	1 1-16	1 1-16	Memorized
Mode Default Messages Altered			
Note Number True Voice	0-127	0-127	-
Velocity Note ON Note OFF	O -	O X	
After Key's Touch Channel's	X O	X O	
Pitch Bender	O	O	
Control Change	O	O	
Program Change True #	O	O	
System Exclusive	O	O	
System :Song Pos :Song Sel Common :Tune	X O X	X X X	
System :Clock Real Time :Commands	X O	X X	-
Aux :Local ON/OFF Messages :All Notes OFF :Active Sense :Reset	X O X X	X X X X	

Mode 1: OMNI ON, POLY
Mode 3: OMNI OFF, POLY

Mode 2: OMNI ON, MONO
Mode 4: OMNI OFF, MONO

O : Yes
X : NO

System Exclusive Message Protocols

1. Receive

A. Currently Active Setup Data

(hex)	F0 06 04	System Exclusive Lexicon ID MRC ID
(bin)	0000 nnnn 0ccc tttt	n=MIDI channel 0-15 c=machine category t=mtype 000=LXP series 0000=LXP-1 0001=LXP-5 001=PCM series 0000=PCM-70 011=Data Protocols 0000=GMIDI
	0hhh hhhh 0bbb bbbb	h=byte count of all data bytes (high 7 bits) b=byte count of all data bytes (low 7 bits)
	0ddd dddd 0ddd dddd etc.	d=data
	0sss ssss	sumcheck of nibblized data bytes
(hex)	F7	End of Exclusive Message

B. Individual Stored Setup Data

(hex)	F0 06 04	System Exclusive Lexicon ID MRC ID
(bin)	0001 nnnn 0ccc tttt	n=MIDI channel 0-15 c=machine category t=mtype 000=LXP series 0000=LXP-1 0001=LXP-5 001=PCM series 0000=PCM-70 011=Data Protocols 0000=GMIDI
	000p pppp	p=setup # (setup #=p+1, i.e. 0 0000=setup1)
	0hhh hhhh 0bbb bbbb	h=byte count of all data bytes (high 7 bits) b=byte count of all data bytes (low 7 bits)
	0ddd dddd 0ddd dddd etc.	d=data
	0sss ssss	sumcheck of nibblized data bytes
(hex)	F7	End of Exclusive Message

C. Setup Bank Data (all setups for one machine type)

(hex)	F0	System Exclusive
	06	Lexicon ID
	04	MRC ID
(bin)	0111 nnnn	n=MIDI channel 0-15
	0sss ssss	s=0 (sub-category, reserved for future expansion)
	0ccc tttt	c=machine category t=mtype 000=LXP series 0000=LXP-1 0001=LXP-5 001=PCM series 0000=PCM-70 011=Data Protocols 0000=GMIDI
	0hhh hhhh	h=byte count of all data bytes (high 7 bits)
	0bbb bbbb	b=byte count of all data bytes (low 7 bits)
	0ddd dddd 0ddd dddd etc.	d=data
	0sss ssss	sumcheck of nibblized data bytes
(hex)	F7	End of Exclusive Message

D. All Setups Data (Full Memory Dump)

(hex)	F0	System Exclusive
	06	Lexicon ID
	04	MRC ID
(bin)	0100 nnnn	n=MIDI channel 0-15
	0hhh hhhh	h=byte count of all data bytes (high 7 bits)
	0bbb bbbb	b=byte count of all data bytes (low 7 bits)
	0ddd dddd 0ddd dddd etc.	d=data
	0sss ssss	sumcheck of nibblized data bytes
(hex)	F7	End of Exclusive Message

E. Bulk Data Requests

(hex)	F0	System Exclusive
	06	Lexicon ID
	04	MRC ID
(bin)	0011 nnnn	n=MIDI channel 0-15
	0eee eeee	e=event code: 60=active setup data 61=stored data, 1 setup 62, 63=unused 64=all registers 65=unused 66=stored data, 1 mtype
	0ccc tttt	c=machine category t=mtype 000=LXP series 0000=LXP-1 0001=LXP-5 001=PCM series 0000=PCM-70 011=Data Protocols 0000=GMIDI
	000p pppp	p=setup # (setup #=p+1, i.e. 0 0000=setup 1)
(hex)	F7	End of Exclusive Message

2. Transmit

Identical to received messages A, B, C and D above. Transmitted in response to request, or when initiated at the front panel.

Notes:

1. Channel # and MIDI mode (OMNI on/off) for SysEx is set in the System Parameters area. OMNI on/off affects reception of data, but not transmission. Transmitted data always carries the channel data specified.
2. Receipt of an Active Setup Data message which has an mtype different from that currently running will be rejected, and will produce an error message. Likewise, an out-of-range setup # will produce an error.

13. Specifications

Power Source:	7.5 VAC rms $\pm 5\%$ @ 1A Wall Transformer (supplied)
Controls:	22 momentary contact keypad pushbuttons 4 slider controls Pushbutton power switch Contrast control
External Inputs:	Two 1/4" Tip-ring-sleeve for pedal control utilizing a 50K potentiometer
MIDI Inputs:	Two 5 pin DIN connectors
MIDI Outputs:	Two 5 pin DIN connectors
Display:	LCD, 2 rows of 24 characters, 5 x 7 dot matrix, EL blue backlight
RFI:	Meets FCC Class A computer equipment requirements
Operating Temperature:	32° - 95°F (0° - 35°C)
Storage Temperature:	-22°-167°F (-30°-75°C)
Humidity:	95% max, without condensation
Dimensions:	9.6"W x 6.4"L x 1.6"D (24.7cm x 16.5cm x 4.2cm)
Weight:	1 lb. 11 oz. (.5kg)