

ExpressionMate

User's Guide

KURZWEIL
Music Systems

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Part Number: 910308 Rev. B

IMPORTANT SAFETY & INSTALLATION INSTRUCTIONS

INSTRUCTIONS PERTAINING TO THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

WARNING - When using electric products, always follow basic precautions, including the following:

1. Read all of the Safety and Installation Instructions before using the product.
2. Do not use this product near water — for example, near a bathtub, washbowl, kitchen sink, in a wet basement, near a swimming pool, or the like.
3. This product, in combination with external equipment that is connected to an amplifier and speakers or headphones, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, consult an audiologist.
4. Place the product so that its location or position does not interfere with its proper ventilation.
5. Keep the product away from heat sources such as radiators, heat registers, or other products that produce heat.
6. Connect the product to a power supply only of the type described in the operating instructions or as marked on the product.
7. If the product will be unused for a long time, unplug the power supply cord from the outlet. When unplugging the power supply cord, do not pull on the cord, but grasp it by the plug.
8. Make sure that objects do not fall and that liquids do not spill into the enclosure through openings.
9. This product is equipped with a polarized line plug (one blade wider than the other). This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace your obsolete outlet. Do not defeat the safety purpose of the plug.
10. This product should be serviced by qualified service personnel when:
 - A. The power supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the product; or
 - C. The product has been exposed to rain; or
 - D. The product does not appear to be operating normally or exhibits a marked change in performance; or
 - E. The product has been dropped, or the enclosure damaged.
11. Do not try to service the product beyond what is described in the user maintenance instructions. Refer all other servicing to qualified service personnel.
12. **WARNING** - Do not place objects on the product's power supply cord, or place the product in a position where anyone could trip over, walk on, or roll anything over cords of any type. Do not let the product rest on or be installed over cords of any type. Improper installations of this type create the possibility of a fire hazard and/or personal injury.

RADIO AND TELEVISION INTERFERENCE

WARNING: Changes or modifications to this instrument not expressly approved by Young Chang could void your authority to operate the instrument.

IMPORTANT: When connecting this product to accessories and/or other equipment use only high quality shielded cables.

NOTE: This instrument has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This instrument generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this instrument does cause harmful interference to radio or television reception, which can be determined by turning the instrument off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the instrument and the receiver.
- Connect the instrument to an outlet on a circuit other than the one to which the receiver is connected.
- If necessary, consult your dealer or an experienced radio/television technician for additional suggestions.

NOTICE

This apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

AVIS

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

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Contents

Chapter 1

Introducing the ExpressionMate

Welcome!

Congratulations, and thank you for purchasing a Kurzweil/Young Chang ExpressionMate. You've got your hands on a powerful and fun MIDI controller, arpeggiator, and MIDI merger.

This manual will get you started with your new instrument. You'll definitely want to keep the manual handy as you become an advanced user, too.

ExpressionMate Overview

The ExpressionMate lets you be more expressive with your MIDI instruments, in live performances and in the studio.

The Ribbon

For starters, the ExpressionMate has a MIDI Ribbon controller. You may already own MIDI instruments that have wheels, joysticks, and pedals. These let you add lots of expressive touches to your sounds, including vibrato, volume swells, and pitch bends, to name a few.

The ExpressionMate's Ribbon lets you do all of that, plus has its own unique abilities. For instance, you can create realistic pitch bends when imitating instruments like trombone or violin, because the Ribbon resembles a slide or a string. The Ribbon is also great when you want to "jump" to a certain point, rather than moving a wheel or pedal through its entire range. You can even use the Ribbon to play notes on your instrument.

Other Cool Stuff

The ExpressionMate has other controls too, including jacks for pedals and a breath controller. The ExpressionMate can also change incoming MIDI Controller messages into different kinds of Controller messages. It even has "virtual" controllers that send MIDI messages automatically.

The Arpeggiator

If you miss having an arpeggiator on your MIDI instrument, you'll have a blast with the ExpressionMate's Arpeggiator. It can turn MIDI notes into simple broken chords, wild rhythmic patterns, and anything in between.

MIDI Merging

The ExpressionMate has two MIDI interfaces. You can use these to merge two incoming streams of MIDI data with the data generated in the ExpressionMate. For example, you could connect two keyboards to the ExpressionMate, play notes on either keyboard while using the ExpressionMate's Ribbon, and send all the information into a sequencer or a MIDI sound module.

K2000 and K2500 Users

K2000 users can create 5 Zone Setups with an ExpressionMate or use the ExpressionMate to add Setup features previously available only to K2500 users, such as velocity remapping and note mapping. K2500 users will be interested to learn that the ability to play notes from the ribbon is more versatile on the ExpressionMate.

How to Use This Book

The ExpressionMate *User's Guide* is designed to help you get up and running quickly. If you know MIDI already, and you know pretty much what you want to do with the ExpressionMate, read Quick Start on page 3. If you need some more help on using the ExpressionMate's many advanced features, you should read all of Chapter 2 and Chapter 3. The remaining two chapters deal with some global functions, plus advanced troubleshooting and diagnostics.

Also, don't forget to check our web site:

<http://www.youngchang.com/kurzweil>

for any late-breaking information on the ExpressionMate and other Kurzweil products.

Above all, have fun, and make lots of great music with your ExpressionMate!

Chapter 2

Getting Started

This chapter will help you hook up your ExpressionMate and learn its basic functions.

Unpacking the Unit

The box that your ExpressionMate ships in contains the following:

- The ExpressionMate
- Ribbon controller
- User's Guide
- AC adapter
- Microphone stand mounting bracket
- Adhesive-backed foam strip
- Hook-and-loop fastener (three pads)

Be sure to keep the box and packing materials, in case you need to ship the unit for any reason.

Quick Start

We recommend that you read through this whole chapter at some point. However, if you want to start exploring your new instrument right away, follow these steps:

1. Carefully remove all the contents of the box.
2. Place the ExpressionMate and the Ribbon controller on a table or other flat, stable surface. Plug the Ribbon's cable into the "Controller" jack on the ExpressionMate's right end.
3. Plug one end of a MIDI cable into the ExpressionMate's rear-panel "Main Out" port. Plug the other end of the cable into the MIDI In port of the device or instrument that you want to

Quick Start

- play. Then plug one end of a second MIDI cable into the ExpressionMate's rear-panel "Main In" port. Finally, plug the other end into your instrument's MIDI Out port.
4. Use the AC adapter to plug the ExpressionMate into an electrical outlet. Then press the rear-panel power switch to turn the ExpressionMate on. Don't be alarmed if you see flashing LEDs when you turn the ExpressionMate on, they just indicate that the Arpeggiator is active on the current Setup.
 5. Turn the receiving MIDI instrument on, make sure that it's in Multi Mode, and make sure that there are programs on MIDI channels 1 through 3. If your instrument doesn't have a Multi Mode, set it to receive on channel 1.
 6. If you are using a MIDI instrument as both the controller and the sound source (that is, you are not sending the ExpressionMate's output to an external sound module), turn Local Control Off on your keyboard. Otherwise you will get double note events on some Setups.
 7. Set your MIDI instrument to General MIDI (GM) mode. If your instrument is not GM compatible, some of the Setups will call up "random" programs on channels 1 – 3. In this case, you may want to turn off the receiving of program changes on those channels.
 8. Start playing! Touch the Ribbon and buttons while you play some notes on your MIDI instrument.

To try different Setups, turn the data knob or press the - and + buttons on the front panel. A complete list of the Setups starts on page 115 of this manual. For starters, check out Setup 3, "Big Strum." Play a chord on your MIDI instrument, then run your finger up and down the ribbon to hear the effect. You do not need to hold the notes on the keyboard. They are remembered until you strike a new chord. Simply strike a chord, play the ribbon, then strike another chord and play the ribbon again.

For more in-depth instructions on setting up and using the ExpressionMate, keep reading this chapter.

Placement and Connections

Placing the ExpressionMate

On a Flat Surface

You can place the ExpressionMate on a table, an equipment rack, or on any keyboard with a flat, open area on its front panel (such as a PC88 or a K2000 keyboard).

On a Microphone Stand with the Bracket

The ExpressionMate includes a bracket for mounting the unit on top of a microphone stand. Follow these steps to use the bracket:

1. Screw the bracket onto the top of the mic stand.
2. Fit the ExpressionMate's left bracket holes onto the bracket's two left-hand tabs. Then lower the right end onto the remaining tab.
3. Tighten the bracket's thumb screw so that it holds the ExpressionMate firmly in place on the bracket.

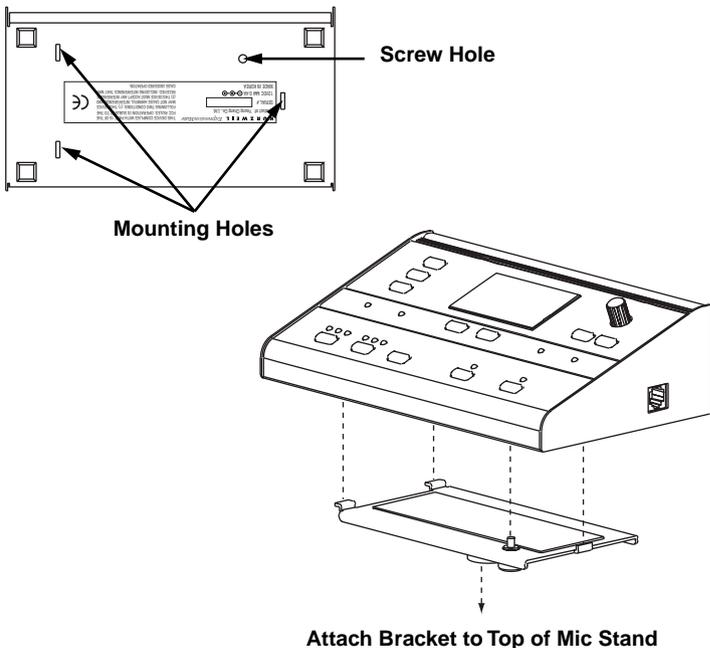


Figure 2-1. Mounting Bracket assembly.

Placing and Connecting the Ribbon Controller

The Ribbon controller can rest on any flat surface, but you may find it easiest to play if it's right in front of you. If your keyboard has enough space on its front panel, you can place the Ribbon just above the keys.



Note:

By default, the Ribbon sends higher values toward its right end (the end with the cable). If you want the cable on the left, and you still want the same response, read "RBN Dir" on page 78.

You can use the included adhesive-backed foam strip (which attaches to the bottom of the ribbon), or the hook-and-loop fastener pads to hold the Ribbon in place. However, don't attach these to surfaces that become damaged easily, such as painted or finished wooden surfaces. Also, we suggest that you attach the hook half of the hook-and-loop pads to the bottom of the ribbon and the loop (softer) half to the mounting surface. This will prevent small mammals from becoming stuck to your keyboard.

When the Ribbon is where you want it, plug the unconnected end of the cable into the "Controller" jack on the ExpressionMate's right side.

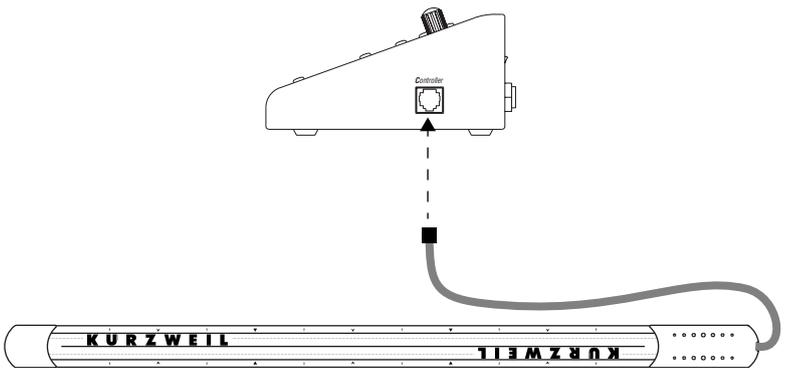
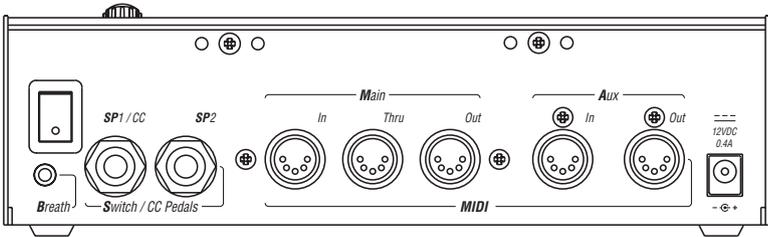


Figure 2-2. Connecting the Ribbon.

The Rear Panel

Here are brief descriptions of the rear panel connectors.



Power Switch

Press this to turn the ExpressionMate on or off.

Breath Jack

Plug a breath controller into this jack.

SP1/CC Jack

Connect either a CC (continuous control) pedal or a switch pedal to this jack.

SP2 Jack

Plug a switch pedal into this jack.

MIDI Ports

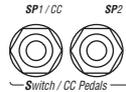
Use these ports to connect the ExpressionMate to other MIDI devices or instruments.

Power Jack

Plug the included AC adapter into this jack.

Connecting Pedals

The ExpressionMate has two rear-panel jacks for connecting pedal controllers. You can connect a switch pedal to SP2, and either a switch pedal or a CC (continuous control) pedal to SP1/CC. To work correctly, the CC pedal must be one that uses a 10K linear potentiometer.



A Special Note About Switch Pedals

The ExpressionMate works with both normally-open switch pedals, and normally-closed pedals (such as those made by Roland, Yamaha, and other Japanese manufacturers). If a pedal is plugged in when you turn the power on, the ExpressionMate detects which kind of pedal it is.

If you hold down a switch pedal while the ExpressionMate powers up, you will reverse the ExpressionMate's response to the pedal. In other words, you might end up sustaining notes when your foot is *off* the pedal, instead of when you push down. Therefore, you should avoid touching the pedals until the startup screen disappears.

Turning the power off and back on again will set the pedals back to normal, as long as you don't touch them.

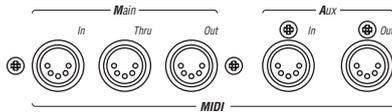
Connecting a Breath Controller

If you have a Yamaha or equivalent breath controller, connect it to the rear-panel Breath jack.



Connecting the ExpressionMate to Your MIDI Gear

There are lots of ways to connect the ExpressionMate to your MIDI devices. We've chosen to show two simple, effective configurations that should give you ideas for your own MIDI studio or rig. You can use the configurations as printed, or modify them for your own needs. (If you play MIDI guitar or some other instrument besides the keyboard, don't be offended. Just use your axe as the master controller.)



Basic MIDI Hookup

Connect the ExpressionMate's Main Out jack to the MIDI In jack of the device that you want to control (such as a keyboard, sound module, or computer). Then connect the other device's MIDI Out jack to the ExpressionMate's Main In jack. Turn Local Control Off on your keyboard.

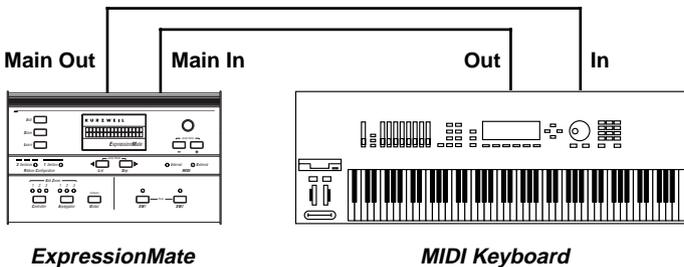


Figure 2-3. Connecting the ExpressionMate to one MIDI device.

Connecting Two MIDI Devices

You can connect a master controller, a MIDI sound module, and the ExpressionMate as shown here.

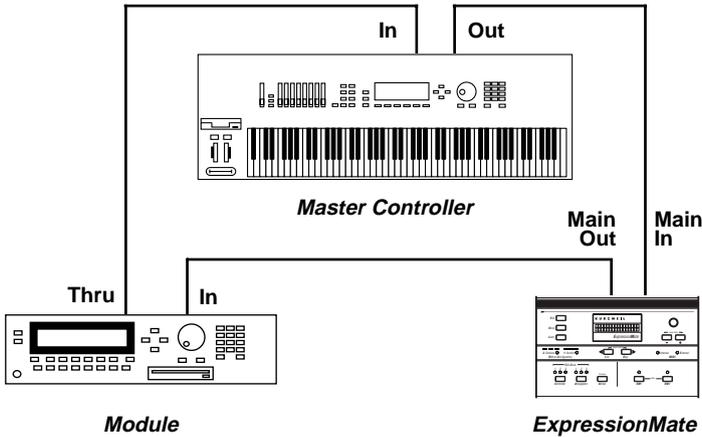


Figure 2-4. Connecting the ExpressionMate to two MIDI devices.

Connecting Several MIDI Devices

You might have sound modules and a computer with a MIDI interface. Here's one arrangement that lets you play everything in your studio from a master controller and the ExpressionMate.

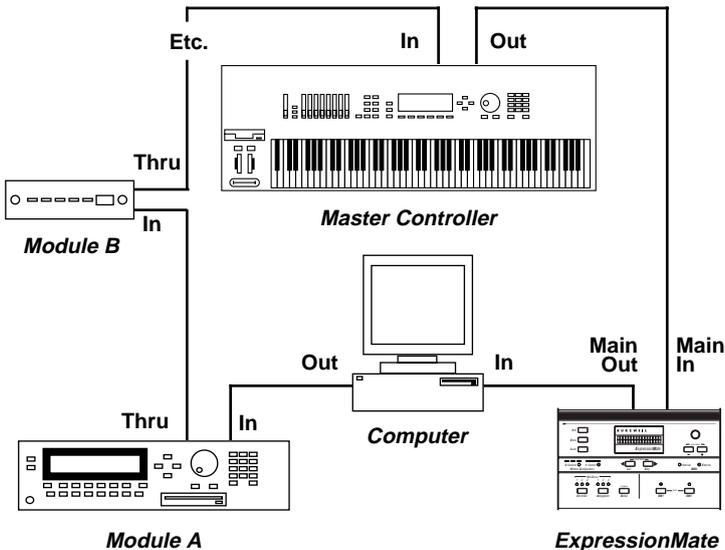


Figure 2-5. Connecting the ExpressionMate to several MIDI devices.

Connecting the Power Supply

Use the included AC adapter to plug the ExpressionMate into an electrical outlet.

Powering Up

Once you have everything hooked up properly, press the power switch to turn the ExpressionMate on. The screen will display a message similar to this one for four seconds:

```
ExpressionMate  
P1=V P2=O C=RBBN
```

Here's what the bottom line means:

- **P1** is Pedal 1. It will equal **V** if a CC Pedal is plugged into the SP1/CC jack, **O** if a normally-open switch pedal is plugged in, or **C** if a normally closed switch pedal is plugged in. If nothing is plugged in, **V** will be displayed.
- **P2** is Pedal 2. It will equal **O** if a normally open switch pedal is plugged into the SP2 jack, or **C** if a normally closed (Roland type) pedal is plugged in. If nothing is plugged in, **O** will be displayed.
- **C** is the controller plugged into the *Controller* jack on the right side of the unit. It will always read **RBBN**, unless Kurzweil introduces other controller types in the future. If nothing is plugged in, **RBBN** will also be displayed.

If you see a different message, such as “Low Battery” or “Memory Failure”, refer to Chapter 6 for more information.

Setting the MIDI Channels

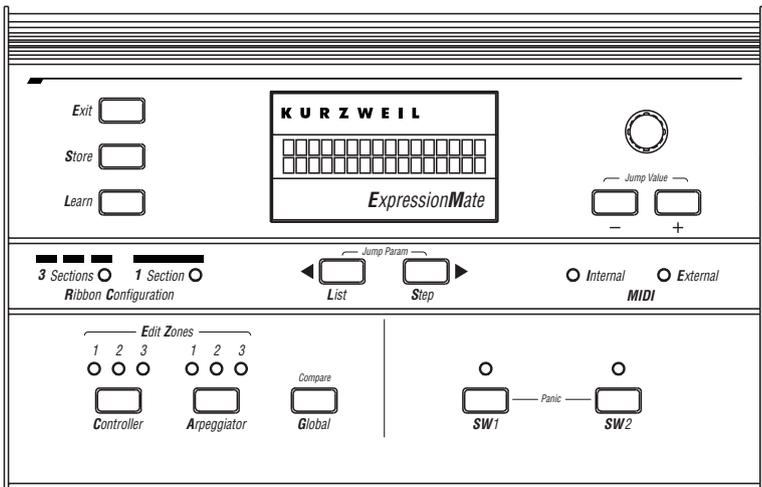
Every Setup has three *Zones* that send out MIDI information when you play the Ribbon or use the Panel Switches and pedals. In many of the Factory Setups, each Zone is set to a separate MIDI channel. To take advantage of all three Zones, make sure that the receiving instrument is in “Multi Mode,” (which is the default mode for most modern instruments) and that there are programs on channels 1 through 3. You can choose any programs you want of course, but you might have more fun if each channel plays a different sound.

If you have two or more instruments, you can set each one to receive on its own channel, so that each ExpressionMate Zone controls a different instrument. You can also set several instruments to the same channel, so that a single Zone can control multiple programs on different instruments.

If the receiving instrument can only play on one MIDI channel at a time, set it to receive on channel 1, 2, or 3.

User Interface Basics

The Front Panel



The Display

The display shows you what Setup you're playing, what parameter you're editing, or what options you can choose during certain tasks. It displays other information too.

Data Knob, - and + Buttons

Use these to scroll through Setups in Play mode, and to change values when you edit Setups.

Cursor Buttons

The cursor buttons (< and >) just below the display let you choose Setups from Setup Lists. While editing Setups, you can press these buttons simultaneously to jump to the next group of parameters.

The cursor buttons also function as “soft” buttons. Options like **Yes**, **No**, **OK**, and **Reload** will appear above the buttons at certain times, like when loading and saving Setups. When this happens, press the cursor button that’s under the option you want.

Exit Button

When you’re editing the ExpressionMate parameters, you can press the Exit button to leave the editor and return to Play mode.

Store Button

When you’re editing Setups, you can press Store at any time to name and save the Setup you’re working on. If you’re in Play mode, pressing Store lets you rename or move the current Setup.

See page 57 for more information on naming and saving Setups. See page 89 for more information on SysEx dumps.

Learn Button

The Learn button lets you perform “Intuitive Entry,” which speeds up certain editing tasks. See page 23 for details on using Intuitive Entry and the Learn button.

Controller Button

Pressing this button takes you into the Controllers Editor, where you change how the Ribbon, pedals, buttons, and breath controller behave in the current Setup.

Arpeggiator Button

Pressing this button takes you into the Arpeggiator Editor, where you define how the Arpeggiator will play in the current Setup.

Global Button

While in Play mode, pressing this button brings up the Global Select screen. You can then edit Global parameters (which affect all Setups) or perform several utilities. While editing a Setup, the Global button works as a Compare button, letting you switch between the original, unedited Setup and the newly-edited Setup.

SW1 and SW2

These are the two panel switches. You can use them to start and stop the Arpeggiator, play notes, send program changes, or to do other things.

Panic Button

When you press SW1 and SW2 simultaneously, they act as a Panic button, which clears up stuck notes, reinitializes the arpeggiators, and resets the Ribbon and other controllers. The “Internal” LED will light for about 5 seconds (or until you release the buttons) and the ExpressionMate will send the following messages:

- All Notes Off, All Sound Off, and Reset All Controllers messages on each channel of the Main Out port, then the same for Aux Out port.
- Note Off messages for every note of every channel of the Main Out port, then the same for the Aux Out port.

Front Panel LEDs

Every time you choose a new Setup, you’ll see the various LEDs on the front of the unit lighting up. Here is a description of each:

- The “Internal” LED lights up when the ExpressionMate generates MIDI messages. This can happen when you play the Ribbon, buttons, pedals, or the Breath controller, or when you send Entry and Exit values by changing Setups.
- The “External” LED shows that the ExpressionMate is receiving MIDI messages at either of its two MIDI In ports, Main or Aux. It should light up when you send external controllers, or notes to the Arpeggiator.
- The “3 Sections” and “1 Section” LEDs show whether the Ribbon is configured as one or three sections.

- The Zone LEDs above the Controller button light when you press the button to enter the Controller Editor. They show which one of the ExpressionMate's three Controller Zones you're working with. (Some edit parameters affect all three Zones, in which case all three LEDs will light up.)
- The Zone LEDs above the Arpeggiator button light when you press the button to enter the Arpeggiator Editor. They show which one of the ExpressionMate's three Arpeggiators you're working with. (Some edit parameters affect all three Arpeggiators, in which case all three LEDs will light up.) These LEDs also "wink" for each beat if that zone's Arpeggiator is active.
- The SW1 and SW2 LEDs light whenever you press the buttons to turn them on. If a button's mode is Toggle, the LED will stay lighted until you press the button again to turn it off. If the button's mode is Momentary, the LED will stay lighted until you release the button.

Note that the LED will only show the button's mode, Toggle or Momentary, for Zone 1 of the current Setup.

Setups

With the ExpressionMate, you play what are called *Setups*. Each Setup contains information that tells the Ribbon, buttons, pedals, breath controller, and Arpeggiator how to behave.

The ExpressionMate comes with several *Factory Setups* that you can use right away. Factory Setups are stored permanently in ROM (Read-Only Memory) so you never have to worry about losing them.

Setups that you create and save are *User Setups*. These are stored in battery-backed memory, so they won't be erased when you turn the ExpressionMate off. When you're ready to create your own User Setups, read Chapter 3.

**Note:**

A memory failure or a drained battery can erase User Setups, so you should back them up regularly. See page 89 for steps on doing this.

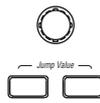
Selecting Setups

Basic Selection

After the ExpressionMate starts up for the first time, you'll see a screen such as this:

```
SU 3
Bi9 Strum
```

This is the main “Play mode” screen. At the top-left is the number of the currently selected Setup. Below that is the Setup name. You use the data knob and the - and + buttons to change Setups.



Using Setup Lists

Pressing the < or > buttons lets you choose a Setup from one of three Setup Lists.



If you press either button while in Play mode, the screen will change to this:

```
SU 3  LS1 STEP1
Bi9 Strum
```

The top line now shows the Setup number on the left, followed by the current List and the current Step within that List. Press the < and > buttons together to go to the next List, and press either < or > to change the current Step.

Setup Lists let you *organize* Setups so that they're easier to find during live performances. For instance, if you use the same five Setups every time you play out, you could create a list containing those five Setups. (See page 87 for steps on doing this.)

Moving the data knob or pressing the - and + buttons takes you out of the Setup Lists.

Changing Setups with MIDI

You can use MIDI program changes to select the ExpressionMate Setups. When you send a program change, the Play mode screen will show the program change number in the upper-right hand corner:

```
SU 3   MIDI123  
Big Strum
```

To be able to change Setups with program changes, you need to set the Ext PgmCh parameter in the Global Menu to a specific MIDI channel, and then send your program changes on that channel. For more on receiving MIDI program changes, see “Program Change Parameters” on page 81 and “Setup Map” on page 88.

Playing Setups

As you go through the Factory Setups, try out the Ribbon and the front-panel buttons to hear what they do. Many of the Factory Setups were programmed to send modulation and Pitch Bend messages, among others. Depending on how your MIDI instrument is configured, you may hear changes in pitch, brightness, or volume.

Basic Technique

There is no correct way to play the ExpressionMate, but you’ll probably find yourself playing your instrument with one hand, and playing the ExpressionMate with the other.

If you have connected pedals or a Breath controller, you’ll have some other controls too. You can also use the ExpressionMate with a sequencer to control tracks during playback or while recording.

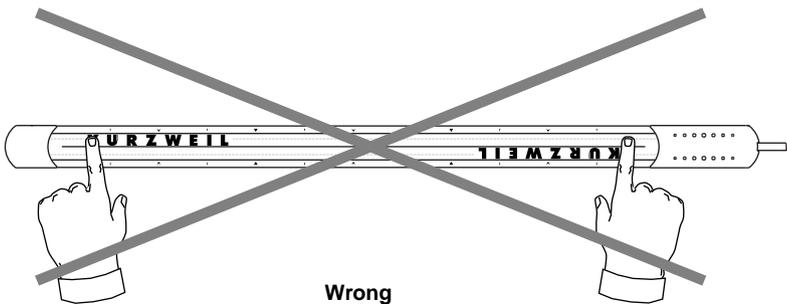
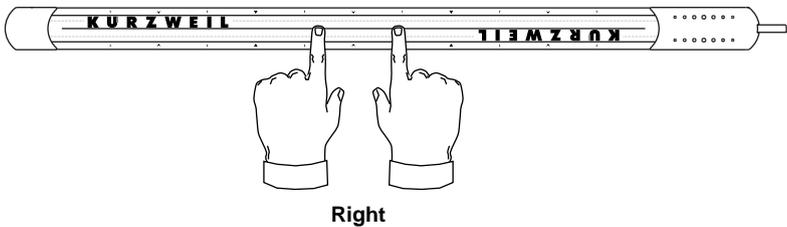
Refer to the list of Setups near the end of this manual to see how the buttons and Ribbon function in each setup.

Touching The Ribbon At More Than One Point

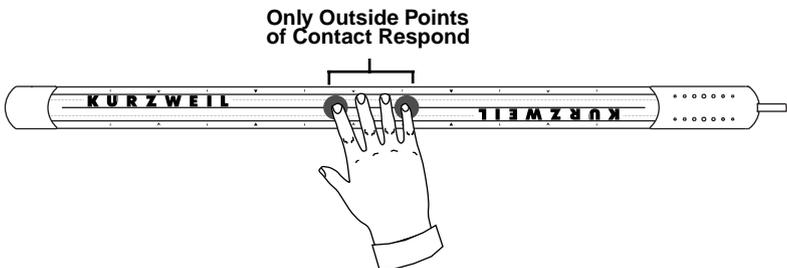
You can touch the Ribbon in two or more places at once.

However, there are a few things to realize when you do this:

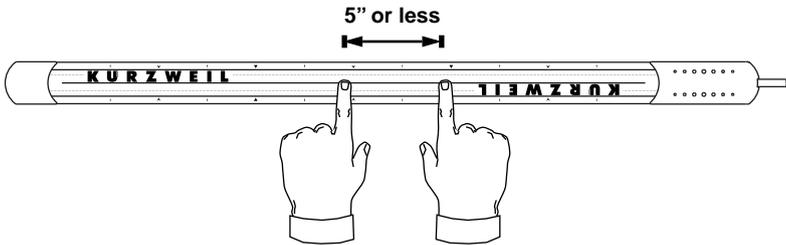
1. When the Ribbon is in single-section mode, play only in one of the three marked smaller sections at any time. In other words, if you press down on the left end and slide up and down the entire Ribbon with the other hand, the Ribbon won't respond correctly.



2. When there are three or more points of contact, any points in the center will have no effect on the Ribbon's output. For instance, if you touch the Ribbon with the first, second, third, and fourth fingers on one hand, only the first and fourth fingers will have any effect.



3. The two outside points of contact should be less than about 5 inches apart. If your fingers are more than 5 inches apart, the other two sections won't work properly.



Getting Back to Play Mode

If while exploring you get lost in the ExpressionMate's editing menus, press the Exit button several times to get back to Play mode. If you're really stuck, you can always turn the ExpressionMate off and back on again (though you might lose changes you made to the current setup).

Troubleshooting

If you're not getting sound from your instrument, or if the ExpressionMate doesn't seem to be doing anything, try the following:

Problem

Solution

No sound from the receiving instrument(s).

Make sure that the ExpressionMate, the other instruments, and your mixer and speakers or headphones are all plugged in and turned on. Check the volume on the receiving instrument and on your mixer or speakers.

Ribbon, pedals, or breath controller behave strangely or don't respond at all.

Check that the Ribbon, pedals, and breath controller are all connected properly. Make sure that the Ribbon's cable comes out of the right end as you face it. If pedals are plugged in, don't press on them while the startup screen is displayed.

Sound comes out of receiving devices, but they don't respond to the ExpressionMate.

Make sure that you've connected the ExpressionMate's Main MIDI Out to the MIDI In port on the first receiving device in the chain, and that this device is set to receive on MIDI channels 1 through 3 (or channel 1 only). If the problem continues, try a new MIDI cable.

Warning message (such as "Replace Battery!" or "Memory Failure") appears on startup.

See Chapter 6 for steps on clearing up the problem.

But It *Still* Doesn't Work

If you connected everything properly and went through all of the Troubleshooting steps, but things still aren't working right, don't panic. Your MIDI instrument may be configured in such a way that the ExpressionMate does unpredictable things to it, or has no effect at all. Read Chapters 3 and 4 to learn how to change the ExpressionMate's settings so that your instrument responds exactly as you choose.

You can also use the built-in diagnostic software to check you pedals, breath controller, and ribbon for proper operation. See Chapter 6.

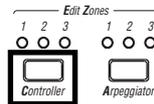
Chapter 3

Editing and Creating Setups

It's possible that many of the Factory Setups will suit your needs perfectly. However, you might want to customize some Setups, or you may have a MIDI instrument that only responds to certain messages. Therefore, you can edit every parameter of the ExpressionMate's Setups by using two editors: The *Controller Editor* and the *Arpeggiator Editor*. The Controller Editor section starts below; the Arpeggiator Editor section starts in the Arpeggiator chapter, on page 61.

The Controller Editor

While in Play mode, press the Controller button at the left of the front panel. This brings you into the Controller Editor, where you can configure the Ribbon, buttons, and other controllers for the current Setup.

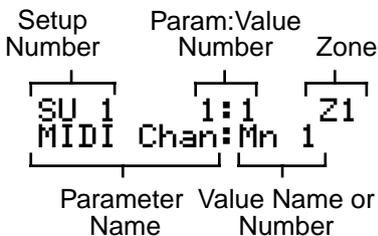


The Controller Editor parameters define what each of a Setup's Zones sends to the two MIDI Out ports, and to the Arpeggiator. They also determine how the ExpressionMate responds to devices connected to the MIDI In ports.

Parameters	Controller Editor Names	Values
MIDI Channel	MIDI Chan	None, Mn 1–16, Aux 1–16
Ribbon configuration parameters	RBN Split, RBN Mode, RBN Sprg	(see page 25)
Controller assignment parameters	RBN (or RBN1, 2, &3), BRTH, CCPD, SP1&2, SW1&2, FIX1, 2, &3, MAP1, 2, &3, Hi/Lo Key Range, ZnXpos, NtVl curve, CCnote scales, ZnNoteMap	(see pages 28-56)

Getting Around

The upper line shows the Setup number and the current Zone. It also shows the parameter number (left of the :) and value number for those who really like numbers. The bottom line shows the parameter name and value name or number for the rest of us. An underline below the bottom line's : signals that the parameter has the same value in all zones.



The cursor buttons (< and >) below the display select parameters. To change the value of a parameter, use the data knob or the - and + buttons on the front panel. If you hold a button down, it keeps scrolling. Each controller has several parameters, so even scrolling can get pretty tedious. For example, if you are looking at **RBN** and you want to get to **BRTH**, you have to scroll through all of the **RBN** parameters first. Therefore, you have two other options: Jump selection and Intuitive Entry.

Jump Selection

Jump selection moves you to the first parameter for each controller. For instance, if you are working on **RBN** parameters, as shown here:

```
SU 1    15:40  Z1
RBN  Scale:100
```

and you want to check the **BRTH** parameters, press both cursor buttons (< and >) and you'll get the first parameter for **BRTH**:

```
SU 1    47:2   Z1
BRTH Dest:Breath
```

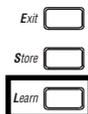
Press both cursor buttons again to go to the control pedal parameters and so forth to visit each controller. You can use a similar method to change values: press the - and + buttons simultaneously to change a value by large increments, such as 32 or 100.

While you're in the Controller Editor, you can also press and hold the Controller button then press the Global button to jump to the Fixed and Map controllers as well as note processing feature, ribbon scale select, the note map, and MIDI channel parameters.

Intuitive Entry

Intuitive Entry gives you an even quicker way to enter values. When you're in the Controller Editor, press and hold the **Controller** button, then move the physical controller that you want to adjust. The display will change to show the controller you've selected and its initial parameter ("Dest" or "Type"). You can choose other parameters for that controller by using the < and > buttons.

Once you've selected a parameter, you can change its value by holding the **Learn** button and moving the controller.



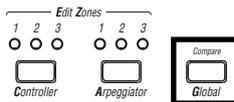
Changing the Current Zone

While in the Controller Editor, press the Controller button (at the lower left of the front panel) to move among the three Zones, each having its own Controller Editor parameters. The LEDs above the Controller button will light to show which Zone you're on. (Some parameters, such as RBN Split, affect all three Zones at once, in which case all three LEDs will light up.)

You can easily set a parameter's value the same in all 3 zones without having to visit each separately. Simply set the value desired in one of the zones (doesn't matter which one) then hold **Learn** then press **Store** to copy the last changed value to the other 2 zones. Be sure to press and hold **Learn** first.

Compare

While you're in the Controller Editor, the Global button acts as a Compare button. Press it at any time to temporarily revert to the unedited Setup. The Zone LEDs will flash to show that the original parameters are in effect. Parameters can still be selected for review while comparing but they cannot be changed. Push Global again to return to the edited Setup, and the flashing will stop.



Setting a Zone's MIDI Channel

The MIDI Chan parameter (#1 located just before **RBN Split**) defines the MIDI transmit channel for the currently selected Zone. You can set it to any of the 16 MIDI channels on either the Main Out or Aux Out port. You can also set it to None, which is a handy way to keep a Zone from sending anything. All of the Zone's other parameters will stay intact, so you can switch the Zone on and off using the MIDI Chan parameter.

Normally, you will want each Zone on a separate MIDI channel. This is necessary if you want to control different programs on the same MIDI instrument. For instance, if you use multiple Zones to send program changes, and all the Zones have the same MIDI channel (and Destination), there will be conflicts: no MIDI device, including the ExpressionMate, can respond correctly to two or

more different simultaneous Program Change commands on one channel. The result will be that only one Program Change will be recognized.

If the MIDI Chan parameter of a zone is set to *-NONE-*, none of the controls are processed for that zone, including those that send to special destinations that don't involve MIDI. So, for example, you can't set the MIDI Chan for Zone 3 to *-NONE-* and then use notes from, say, a ribbon in that zone as the source for an arpeggiator. If you really want to use control values in a zone but don't want to send any MIDI from it, consider directing the output to the Aux port or to an unused channel.

Stacking Zones

There will be times when “stacking” Zones on the same MIDI channel will come in handy. Suppose you want to send two *different* MIDI Controllers to the *same program* on your synth. In this case, you can assign two Zones to the same channel, but with different controller assignments.

Here's one example: say your synth uses Modulation (01) to open a filter, and Data (06) messages to increase the filter's resonance. If you want to do both at the same time, you could use a single CC pedal to send both messages. First, assign the CC pedal in Zone 1 to ModWhl, and in Zone 2 to Data. Then assign both Zones to the same MIDI channel. Now moving the CC pedal opens or closes the filter and adds or removes resonance.

Keep in mind that the Factory Default settings will look at MIDI notes coming in on Main MIDI channel 1 and process them through the each zone's parameters. This will double or triple the number of notes going to your MIDI out channel. The most versatile way to prevent this is to set the Low Key range to a note that is higher than the High Key range (for example, NtLowKey: C3 and NtHighKey: C2). You can also set the Global MergUnPro to Neither (see page 81), which will affect all of your Setups, disabling the Note processing features in the controller editor.

Ribbon Configuration Parameters

These parameters tell the Ribbon how to respond when you touch it. When the Ribbon is in single-section mode, there are three parameters for configuring the Ribbon: Rbn Split, Rbn

Mode, and Rbn Sprg. In three section mode, there are seven parameters in all (the RBN Split parameter, plus a Mode and Sprg parameter for each section).

The Ribbon Configuration parameters define how the section responds to finger position.

PARAMETER	RANGE OF VALUES	DEFAULT
SPLIT	One Section/Three Sections	One Section
MODE	Relative/Absolute	Absolute
SPRING	0-127, None	None

Split

This selects a one- or three-section configuration of the Ribbon. You can use the Ribbon as one controller, or divide it up into three smaller sections, each with its own controller assignments.

Along the edges of the Ribbon are several white arrows; these arrows divide the Ribbon into sections, point to each section’s center, and show smaller divisions within the sections. The arrows are especially helpful when **Split** is set to Three-Sections, though they’re also handy when using the Ribbon as a single-section controller.

The figure below assumes that the Global **RBN Dir** parameter is set to Right, meaning that values get higher toward the end with the cable. To learn how to change this parameter, see “RBN Dir” on page 78.

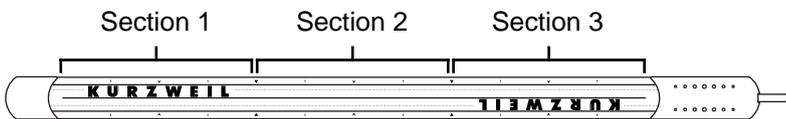


Figure 3-1. Ribbon sections.

Note that you can set one group of parameters for the Ribbon in single-section mode, and different parameters for three-section mode. Both sets of parameters will be there when you save the Setup, but only one set of parameters will take effect at a time. In other words, if the Ribbon is in single-section mode, you’ll be using only the single-section parameters.

Mode

Each Ribbon section can interpret your finger's position as a relative or an absolute value.

Relative means that the Ribbon's travel will begin from wherever you put your finger. Therefore, if you set the Ribbon to bend pitch, and Mode is Relative, putting your finger on the Ribbon will mark a starting place. Subsequently moving your finger left or right will bend pitch *relative to* your initial finger position, until you lift your finger away. You can press down at any other place on the Ribbon, and get the same results by moving your finger the same distance.

Setting Mode to **Absolute** means that the Ribbon's travel will start from its center, no matter where you put your finger. Every point on the Ribbon marks a set value, and putting your finger at various points on the Ribbon will give you the same values each time. For example, if a Ribbon's Destination is Volume and Mode is Absolute, pressing on the left-most end of the Ribbon will always set the Zone's volume to the same value.

Spring (Sprg)

You can set each Ribbon to have a Spring, so that when you lift your finger, the Ribbon returns to a specified value automatically.

The value you set for Spring defines the "center," or starting point of travel, for each section on the Ribbon. You can choose any point between 0 and 127. A value of 64 puts the center physically in the middle of each Ribbon section. Values of 0 or 127 place the center at the section's extreme left or extreme right, respectively.

If Mode is Relative, the Ribbon will return to the point where you initially placed your finger. If Mode is Absolute, the Ribbon will return to its center.

When Spring is "None", the Ribbon will "freeze" when you lift your finger. If you then leave the Setup, the Ribbon remembers its current position; when you select a new Setup, the Ribbon's travel will begin where you last pressed down. If you want to avoid being surprised by unexpected controller values (such as unruly pitch changes), go to the RBN Entry parameter, and select an entry value other than "None" for each Ribbon section.

Controller Editing

Controller editing lets you create custom ExpressionMate Setups for use in your MIDI studio or on stage. In this section, we'll talk about two different types of "controllers" as they apply to the ExpressionMate.

One is the *physical* controllers: the Ribbon, buttons, pedals, and breath controller that you move with your fingers, feet, or breath. The other is *MIDI* Controllers, which are the MIDI commands that the ExpressionMate sends. For our purposes, "MIDI Controllers" includes the complete set of Controllers defined by the MIDI Specification, as well as pitch bend, aftertouch, and a few other useful MIDI commands. To avoid confusion, we'll refer to the ExpressionMate's physical controllers with a lower-case "c", and MIDI Controllers with an upper-case "C".

You can assign any *physical* controller, in any Zone, to transmit any *MIDI* Controller. You can also adjust each controller in each Zone, just like the parameters on many synths and samplers.

The ExpressionMate's physical controllers include:

- the Ribbon, which you can define as a one- or three-section controller.
- the two Panel Switches, **SW 1** and **SW 2**.
- the **Breath** jack, which accepts a Yamaha (or equivalent) breath controller.
- the two Pedal jacks, **SP 1/CC** and **SP 2** (SP 1/CC accepts either a switch pedal or a continuous control pedal).

There are also two sets of "virtual" controllers, which behave much like physical controllers. These are:

- Fixed controllers, **FIX1**, **FIX2**, and **FIX3**, which automatically send values when you select Setups.
- MIDI Remap controllers, **MAP1**, **MAP2**, and **MAP3**, which can take incoming MIDI Controllers and change them into other MIDI Controllers.

The pictures and tables that follow give an overview of the controllers and their parameters.

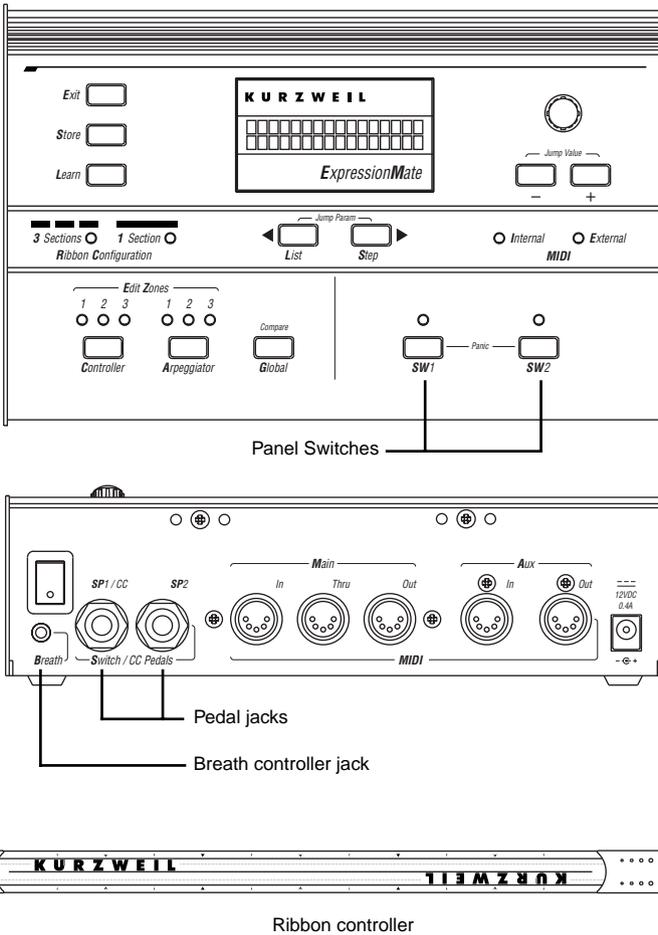


Figure 3-2. The ExpressionMate physical controllers.

Continuous Controllers

Physical Controller	Controller Editor Name	Parameter:Values
Ribbon controller	RBN (in single-section mode) or RBN1, RBN2, and RBN3 (in three-section mode)	Destination: None, 0–127 Aux Destination: None, 0–39, 43–127
		Curve: 0 – 12 (see picture for shapes)
		Curve Amount: 0 – 8
		Scale: -300% to 300%
		Offset: -127 to 127
		Resolution: 7-Bit, 14-Bit
		Entry Value: None, 0–127, Current
		Exit Value: None, 0–127
Breath controller	BRTH	(same as Ribbon, except no Aux Destination)
CC Pedal	CCPD	(same as Ribbon, except no Aux Destination)

Switch Controllers

Physical Controller	Controller Editor Name	Parameter:Values
Switch Pedals 1 & 2	SP1, SP2	Type: Toggle, Momentary
		Destination: None, 0–40, 43–127
		On Value: None, 0–127, Current
		Off Value: None, 0–127
		Entry Value: None, Off, On, Current
		Exit Value: None, Off, On
Panel Switches 1 & 2	SW1, SW2	(same as Pedals)

Virtual Controllers

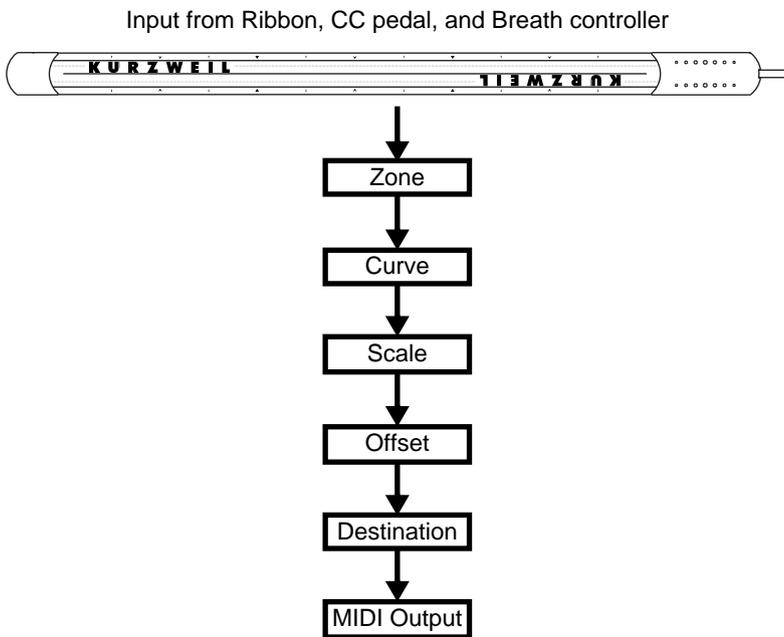
Virtual Controller	Controller Editor Name	Parameter:Values
Fixed controllers	FIX1, FIX2, FIX3	Destination: None, 0–40, 43–127
		Entry Value: None, 0–127
		Exit Value: None, 0–127
MIDI Remap controllers	MAP1, MAP2, MAP3	Destination: None, 0–39, 43–127
		Source: None, 0–32, 64–119, PBend, ChnPrs
		Curve: 0 – 12 (see picture for shapes)
		Curve Amount: 0 – 8
		Scale: -300% to 300%
		Offset: -127 to 127
		Entry Value: None, 0–127
Exit Value: None, 0–127		

After you've selected which Zone and which controller to work with, use the **Destination** parameter to choose what this controller will do. Some of the controllers have default settings that are pre-programmed in some of the Factory Setups (of course, you can change them). You can select from the entire list of numbered MIDI controllers, as well as other MIDI commands and some "Special Functions." To move through the list, use the data knob and the - and + buttons, or hold the **Learn** button and move any continuous controller.

Continuous Controller Parameters

The continuous (physical) controllers are those that have a *range* of values: the Ribbon, the continuous control pedal, and the breath controller. As the table on page 30 shows, all of them use mostly the same parameters. Each parameter's function is described below.

The illustration below shows the processing order that the ExpressionMate uses to create Continuous Controller messages from your input.



Destination (Dest)

Use this parameter to choose a Destination from the MIDI Destination List (see page 48). The Destination tells the physical controller what MIDI Controller to send. Such messages include Modulation (01) and Volume (07), plus others. The ExpressionMate also has some “Special Function” Controllers, which can send MIDI notes, control the arpeggiator, and do some other things.

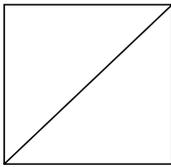
Curve (Curv)

This lets you taper the controller response. The default setting is **Linear**, which means that it follows a straight line as you move the controller.

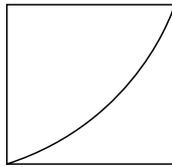
Curve Amount (CrvAm)

Enter a value from 0 through 8 to specify how pronounced you want the curve to be.

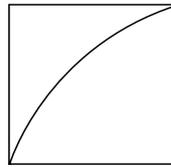
Curve Examples
(Amount = 3)



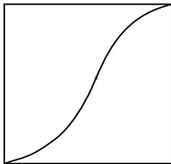
0 Linear



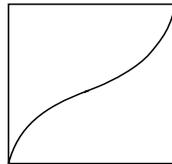
1 Expand



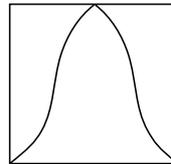
2 Compress (Cmpres)



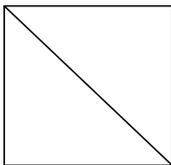
3 CrossFade
(XFade)



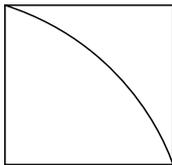
4 CrossSwell
(XSwell)



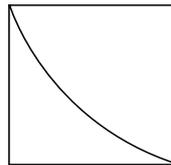
5 Bump



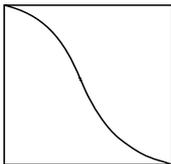
6 Reverse Linear
(RevLin)



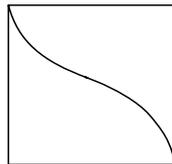
7 Reverse Expand
(RevExp)



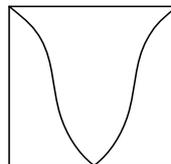
8 Reverse Compress
(RevCmp)



9 Reverse CrossFade
(RevXfd)



10 Reverse CrossSwell
(RevXsw)



11 Reverse Bump
(RevBmp)

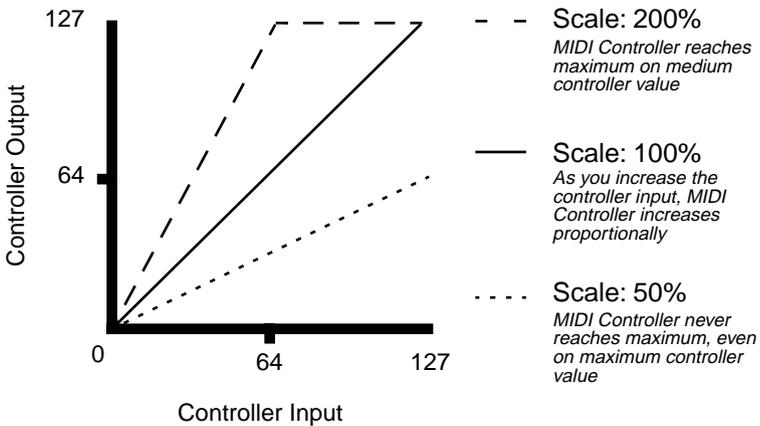
Scale (Scal)

Scale lets you amplify or diminish the action of the controller. No change is 100%. Higher values will make the controller more sensitive, and lower values will make it less so. Setting the scale to a negative number makes the controller action work in reverse. You can use a controller to crossfade between two Zones by setting the scaling for one Zone positive and the other negative. (Or you could accomplish the same thing by having one zone set

to a normal curve and the other zone set to the corresponding reverse curve- it's up to you!)

Maximum scale values are +300% and -300%.

The picture below shows what happens when you change Scale. Note that Scale is the only parameter changed in this example; the other parameters are set to their defaults (Offset = 0 and Curve = none).

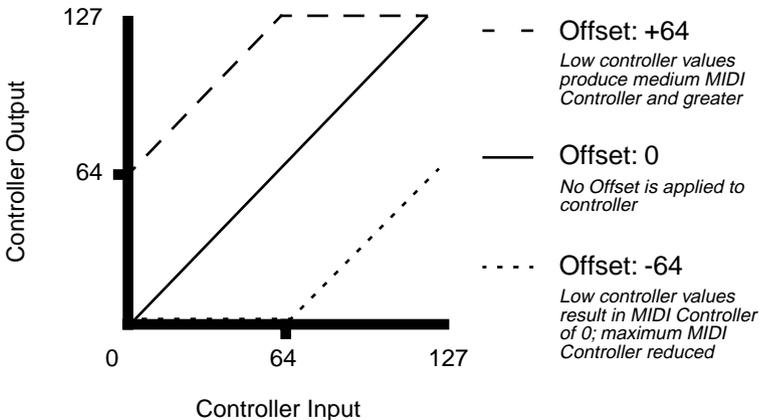


Offset (Offs)

This adds or subtracts a constant to the scaled controller, and at the same time sets minimum or maximum values. If the offset is 25, the minimum value of the controller will be 25. If it is -25 (and scale is 100%) the first one-fifth of the controller's movement ($25/127 = \text{about } 1/5$) will send value of 0, and the maximum value of the controller will be 102 ($= 127-25$). The maximum values for Offset are ± 127 .

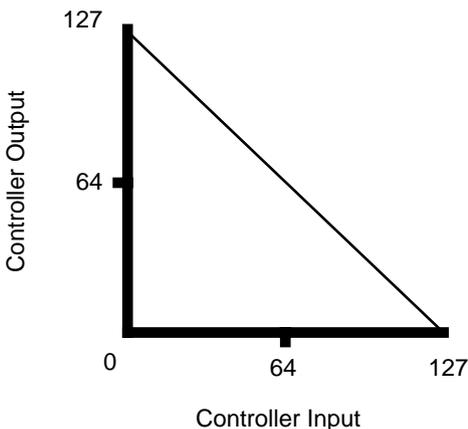
You can think of Scale as being a proportional change to the Controller, while Offset is an up or down shift. The picture below shows the effects of Offset. Note that Offset is the only parameter

changed in this example; the other parameters are set to their defaults (Scale = 100% and Curve = none).



Offset and Scale work together. If scaling takes the controller out of the ballpark — for example, you want to set it to 300% but that puts *all* of the controller’s readings at their maximum values — using a negative offset, say around -60, still lets you send different values, though your curve will be a lot steeper than normal.

If you use a negative scaling, then you *must* use an offset, or all of your Controller messages will end up as zeroes. So to get true inverse scaling (that is, minus 100%) with the full range of values, you must set Offset to 127 and Scale to -100%. Doing so produces a slope like this (which is identical to the Reverse Linear curve):



Resolution (Res)

Resolution lets you “smooth out” continuous controller response on some instruments.

Setting Resolution to 7-Bit will cause the controller to send only MSB (Most Significant Byte) messages. This means that the controller will transmit up to 128 different values, which is what many instruments expect.

A setting of 14-Bit will send both MSB *and* LSB (Least Significant Byte) Controllers, meaning that the controller can potentially transmit up to 16,384 (128x128) values. On some instruments, this gives you finer control over parameters like Pitch Bend and Modulation, thus making things like pitch bends and volume swells sound smoother. If your instrument doesn’t use the LSB Controller messages, it will just ignore them, and you’ll hear no difference with 14-Bit resolution. Most of the time, however, you’ll be better off if you don’t use 14-bit resolution, since it can use quite a bit of your bandwidth and sequencer memory.

Entry (Entr) and Exit Values

Entry Value

Entry Value lets you specify an initial value for a controller that will be sent whenever you select that Setup. Let’s say that you assigned the CC pedal’s Destination to ModWhl in Zone 1. If you want to make sure that all of the modulation in Zone 1 is turned off when you select the Setup, set the CC pedal’s Entry Value to 0.

Entry Values ignore the current position of the physical controller when the Setup is selected. In fact, if the physical controller is above or below the Entry Value when the Setup is selected (which it often is), moving the controller will have no effect until it passes through its Entry Value. In the modulation example, moving the CC pedal won’t turn on any modulation until you push it all the way *down*, and then up again.

An Entry Value of **None** is quite different from a value of “0”. “None” means that there will be no initial controller command when you select the Setup, and moving the physical controller will have an immediate effect. (The *position* of the physical controller when the Setup is first selected, however, is still

ignored.) It also means that when you select the Setup, the controller's value will initially be the same as it was in the last Setup.

Current means that the current position of the control is sent even though it has not changed. This may be needed as an entry value if, for example, the previous setup sent the physical controller to a different MIDI controller than the current setup.

Exit Value

Exit Value tells the ExpressionMate to send a value for that controller whenever you leave the Setup. It can be very useful when a controller is doing something special to the sound which you don't want to continue after you leave the Setup. For example, if you want to make sure a Zone's pitch returns to normal whenever you leave a Setup, you would give an Exit Value of 64 to any controller whose Destination is PBend+. Again, "None" means that no command is sent.

Ribbon Assignment Parameters

This section explains how to change which messages the Ribbon sends. To change how the Ribbon responds to finger movement, see "Controller Editing" on page 28.

The Ribbon assignment parameters let you define controller assignments for the Ribbon controller. Each Ribbon section senses movement when you press on it and move your finger left or right. This creates numerous possibilities for controlling pitch, volume, panning, crossfades between zones, and other uses you might imagine.

As we mentioned earlier, the Ribbon can be used as a single long controller, or it can be divided into three separate sections, each with its own controller assignments. These sections and their centers are indicated by the smaller arrows above the strip. There are also arrows directly in the center to give you a visual indication of the center point when you are using the Ribbon as one long strip.

Look over the various parameters. Since all the continuous controllers work in a similar way, CCPD and BRTH have most of the same parameters.

AuxD

There is one exception: the Ribbon has an Auxiliary Destination (AuxD) letting you send a total of two controller messages from each Ribbon section in each Zone. AuxD takes effect whenever you move away from the initial point of contact on the Ribbon. AuxD will always spring to a value of 64; when it is active, it is controlled by Curves, Entry, and Exit values. You must scale it to send something like modulation from 0 to 127 from the first point where you place your finger.



Note:

AuxD is only meaningful when the normal destination is one of those that plays notes (40-42). See the description of the Note Controllers on page 54 for more information on playing notes from the ribbon and continuous controllers.

PARAMETER	RANGE OF VALUES	DEFAULT
DESTINATION	MIDI Destination List	None
AUX DESTINATION	0–39,43–127, None	None
CURVE	Curve List (See Text)	None
CURVE AMOUNT	0–8	0
SCALE	-300% to +300%	+100%
OFFSET	-127 to +127	0
RESOLUTION	7-Bit, 14-Bit	7-Bit
ENTRY VALUE	None, 0–127, Current	None
EXIT VALUE	None, 0–127	None

Breath (BRTH) Parameters

You can plug a breath controller into the rear-panel Breath jack. If you're not familiar with breath controllers, they usually resemble the headsets worn by telephone operators. Blowing into the controller's mouthpiece sends Controller data. You can imitate flutes, saxophones, and other wind or brass instruments more easily this way, because you're using your breath pressure to control the sound.

Remember that you don't have to send just Breath (02) messages with a breath controller. The ExpressionMate lets you send any of the available Controllers in the Destination list.

PARAMETER	RANGE OF VALUES	DEFAULT
DESTINATION	MIDI Destination List	Breath
CURVE	Curve List (See Text)	None
CURVE AMOUNT	0–8	0
SCALE	-300% to +300%	+100%
OFFSET	-127 to +127	0
RESOLUTION	7-Bit, 14-Bit	7-Bit
ENTRY VALUE	None, 0–127, Current	None
EXIT VALUE	None, 0–127	None

Continuous Control Pedal (CCPD) Parameters

The rear-panel “SP1/CC” jack lets you connect a CC (Continuous Control) pedal.

PARAMETER	RANGE OF VALUES	DEFAULT
DESTINATION	MIDI Destination List	None
CURVE	Curve List (See Text)	None
CURVE AMOUNT	0–8	0
SCALE	-300% to +300%	100%
OFFSET	-127 to +127	0
RESOLUTION	7-Bit, 14-Bit	7-Bit
ENTRY VALUE	None, 0–127, Current	None
EXIT VALUE	None, 0–127	None

Switch Controller Parameters

Switch (physical) controllers have only two states: on and off. The the ExpressionMate's switch controllers are:

- Panel Switches 1 and 2 (SW1 and SW2)
- Switch Pedals 1 and 2 (SP 1 and SP 2)

Switch Type (Type)

The parameters for switch controllers are slightly different from those for continuous controllers. The first parameter is Switch Type (**Type**). The choices are **Momentary** in which a switch's action lasts only as long as you are pressing it, and **Toggle**, in which the switch's action lasts until you press it again. The Momentary mode works best for functions like sustain or

portamento, while the Toggle mode works best for functions like turning the Arpeggiator on and off.

The LED above each Panel Switch shows that switch's state. In Momentary mode, an LED lights only as long as you are holding the switch. In Toggle mode, the light stays on until you press the Panel Switch again. Keep in mind that one Panel Switch can do something different in each Zone, and since there's only one light per switch, the light only shows the switch's state for Zone 1. However, when you press the Panel Switch, it executes its assignments for all Zones that use the switch.

On Destination (On D), Off Destination (Off D)

On Destination and **Off Destination** determine what message will be sent when you turn a switch on or off, respectively. The list of available Destinations on page 48 is almost the same as for the continuous controllers, and can be accessed the same way.

It's typical to set the same Destination for both, so that you can turn a Controller on or off. You could also send two *different* messages. For example, you could set Switch Type to momentary, On Destination to a Bank Select Controller (BkSelM or BkSelL) and Off Destination to Program Change. Then you can use a switch or a pedal to call up a program on another instrument that uses Bank Select to access more than 128 programs.

On Destination and Off Destination can also be set to "none," so that pressing on the switch has no effect at all in a Zone.

On Value (On V)

On Value sets the value of the Controller when you turn the switch on. For some functions the On Value should be 127. For example, the default On Destination for SP1 is Controller #64 — Sustain — with an On Value of 127. In other cases, you might want a different On Value. For instance, you could use a button or pedal as a "soft" switch to lower a sound's volume only part-way. In this case, you might set the On Destination to Volume (07) and the On Value to 50.

Off Value (Off V)

Off Value is the value of the Controller when you turn the switch off. The default value is 0. Continuing the “soft switch” example above, let’s say you want to bring the Zone up to full volume when you release the switch. Set the Off Destination to Volume (07) and set the Off Value to 127.

Entry (Entr) and Exit States

Entry State can send an initial value for the switch when you select the Setup. There are four choices: None (no change), Off (the Off Value), On (the On Value), and Current. Current sends the current state of the switch without changing it. It is different than None, which specifies that nothing is to be sent on entry and exit.

If a Panel Switch’s Entry State is “On,” the switch will light as soon as you select the Setup.

Exit State can send a value for the switch when you leave a Setup. The choices On, Off, and None are available. This is very useful for turning off Sustain when changing Setups, so you can avoid “stuck” notes.

Switch Pedal (SP) Parameters

On the back of the instrument, there are two jacks for switch pedals.

PARAMETER	RANGE OF VALUES	DEFAULT
SWITCH TYPE	Momentary, Toggle	Moment
ON/OFF DESTINATION	MIDI Destination List	SP1: Sustain SP2: SostPd
ON VALUE	0–127	127
OFF VALUE	0–127	0
ENTRY VALUE	None, On, Off, Current	None
EXIT VALUE	None, On, Off	None

Panel Switch (SW) Parameters

The ExpressionMate has two Panel Switches on the right side of the unit. Each of these functions exactly like the switch pedals; you can choose between momentary and toggle switches, and set on and off values for each one.

PARAMETER	RANGE OF VALUES	DEFAULT
SWITCH TYPE	Momentary, Toggle	Moment
ON/OFF DESTINATION	MIDI Destination List	SW1: ARP1 SW2: ARP2
ON VALUE	0–127	127
OFF VALUE	0–127	0
ENTRY VALUE	None, On, Off, Current	None
EXIT VALUE	None, On, Off	None

Virtual Controllers

Every Zone has six “virtual” controllers; that is, they aren’t physical controllers like Mod Wheels or buttons, but they can act in very similar ways. The ExpressionMate’s virtual controllers are:

- Fixed Controllers (FIX1, FIX2, and FIX3)
- MIDI Remap Controllers (MAP1, MAP2, and MAP3)

Fixed Controller (FIX) Parameters

The Fixed controllers each send a fixed value automatically, whenever you choose a new Setup. Though you can do this with any controller (by setting Entry and Exit values), you may prefer to use the Fixed Controllers instead, leaving the Ribbon and other controllers free for more complex uses.

Note that with the Fixed controllers, the Entry and Exit Values determine the On and Off Values. Also note that when you choose a Setup, the ExpressionMate sends FIX1 first, then FIX2, then FIX3. This is especially useful for sending Bank Select and Program Change messages when selecting a Setup. (For an example of how to do this, see the discussion of the PrgChg Special Function on page 53.)

PARAMETER	RANGE OF VALUES	DEFAULT
DESTINATION	0–40, 43–127	None
ENTRY VALUE	None, 0–127	None
EXIT VALUE	None, 0–127	None

MIDI Remap Controller (MAP) Parameters

The ExpressionMate includes three MIDI Remap Controllers. These take incoming MIDI data, such as Modulation messages, and turn the data into some other Controller message.

For instance, your MIDI keyboard might transmit only Modulation (01) and Channel Pressure (Aftertouch) messages. You might want to control the volume on a sound module, but that device won't change Mod Wheel or Channel Pressure messages into Volume (07). In this case, you could set MAP1's Source to ModWhl, and its Destination to Volume. Now the ExpressionMate will change incoming Mod Wheel messages to Volume messages. There are lots of other possibilities too.

The Source parameter lets you choose many of the Controllers found in the Destination list (see page 48). The Special Functions (33–63) and MIDI Controllers 120–127 aren't available as sources. This is because most of the Special Functions are only found on the ExpressionMate, and because remapping Controllers 120–127 (which send messages like "Omni Off" and "All Notes Off") isn't useful. However, you can set Source to Pitch Bend (128) and Channel Pressure (129), because you may want to remap these Controllers.

One more thing: you can use a remap controller as a fixed controller by assigning None as the Source.

PARAMETER	RANGE OF VALUES	DEFAULT
DESTINATION	0–39, 43–127	None
SOURCE	MIDI Destination List (with exceptions) plus PBend and ChnPrs	None
CURVE	Curve List (See Text)	Linear
CURVE AMOUNT	0–8	0
OFFSET	-127 to +127	0
SCALE	-300 to +300	100
ENTRY VALUE	None, 0–127	None
EXIT VALUE	None, 0–127	None

Note Processing Parameters

Controller parameters 124–134 allow you to set note values, note velocity values, and how notes will be played by physical controllers.

PARAMETER	RANGE OF VALUES
124 Note Low Key (NtLowKey)	C-1 – G9
125 Note High Key (NtHighKey)	C-1 – G9
126 Note Transpose (Nt Xpose)	-64 – 63, Ctlr #39
127 Note Velocity Curve (NtVI Curv)	Curve List (See Text)
128 Note Vel. Curve Amount (NtVICrvAm)	0–8
129 Note Velocity Scale (NtVIScale)	-300 – 300
130 Note Velocity Offset (NtVIOfst)	-127 – 127
131 CC Note Scale (CCNoteScl)	ROM scales (described in following section), Arp latch, 8 User, Ctlr #46
132 CC Note Velocity (CCNoteVel)	0-127, Ctlr #44
133 CC Note Transpose (CCNoteXpo)	-64 - +63, Ctlr #43
134 Zone Note Map (Note Map)	Off, Linear, Inverse, Constant, 1-of-2, 2-of-2, 1-of-3, 2-of-3, 3-of-3, 1-of-4, 2-of-4, 3-of-4, 4-of-4

The Keyrange parameters (**NtLowKey**, **NtHighKey**) let you set the key range that will be processed by the Controller Editor functions. Notes below or above the keyrange will not be audible, and will not be sent to the Arpeggiator. It is also possible to set the Note Low Key to a value above the Note High Key. This can be used to block the merging of unprocessed notes when more than one Arpeggiator Zone is using the same note source. For more on this read the Note Source section in the Arpeggiator chapter, and the MergeUnPro section in the Global Functions chapter.

Note Transpose (**Nt Xpose**) allows you to transpose a Zone's note output up or down a little more than 3 octaves. A value of zero is the original pitch.

Note Velocity Features

The next group of parameters – Note Velocity Curve (**NtVI Curv**), Note Velocity Curve Amount (**NtVICrvAm**), Note Velocity Scale (**NtVIScale**), and Note Velocity Offset (**NtVIOfst**)

– affect note velocity. The curves used are the same as Ribbon, Breath, CCPD, and Remap Controllers. This allows you to switch sounds by how hard you press the keys or tailor the “feel” of a controller to a sound module, so the sound responds well to your playing style. You can reverse the velocity so that when you play harder the notes are quieter or to limit the ranges so that when you play softly a sound from one Zone is heard and when you play harder a sound from another Zone is heard. See page 33 for detailed description of how the curve parameters work.

Continuous Controller Note Parameters

These parameters are used to set how controllers 40, 41, and 42 play notes from a physical controller. Continuous Controller Note Scale (**CCNoteSci**) assigns the scale that will be played. You can set it to one of the 17 ROM scales or the 8 User scales. The list of ROM scales is on page 47.

Continuous Controller Note Velocity (**CCNoteVel**) sets the note velocity at which the CC note will play. You can set it from 0-127 or use controller 44 to change it in real time.

Continuous Controller Note Transpose (**CCNoteXpo**) transposes CC notes up or down 3 octaves. This parameter works in conjunction with controller 43 Note Offset (see page 55). Remember that the 13 Note controller (40) and Scale length controller (42) center around C4 while controller 41, 37 Note, centers on C3. If you create a User scale, the starting pitch can be any note within a 2 octave range. With controller 40 and 42, however, it will always be between C4 and C6; in 37 Note the scale will be between C3 and C5 (when the Note Transpose is set at 0).

Zone Note Map (**ZnNoteMap**) allows you to change the way notes are sent from the ExpressionMate. The Default is Linear, which plays notes from low to high as a keyboard would normally play. Inverse (Invrse) will play the notes opposite of the Linear setting, so high notes will play from the left to low notes on the right. Constant (Const) will play one note; set the note with the Zone Transpose. The next 10 values are alternating Note maps and these can be used in a variety of ways. If you have two of the same sound module you can double your polyphony by setting one Zone to send 1 of 2 to one module and another Zone to send 2 of 2 to the other module. The first Zone will Play C, skip C# then play D then skip D# and so on. Zone 2 will skip C play

C# and so on. The rest of the maps work in the same fashion but will skip two or three notes respectively. You can also use this to add rhythmic holes in arpeggiations or play alternate sounds from one key to the next. When set to Off, no notes will be sent. Note that this will disable the ability for a Zone to send notes to the arpeggiator.

ROM Scales

CCNoteScl allows you to choose from the following scales:

Chromatic (Chrom)

Major (Major)

Minor (Minor)

Melodic Minor (MelMin)

Harmonic Minor (HarMin)

Major Pentatonic (MjPent)

Minor Pentatonic (MnPent)

Expand Pentatonic 1 (Expnt1)

Expand Pentatonic 2 (Expnt2)

Blues (Blues)

Whole Tone (WholeT)

(W/HDim)

(H/WDim)

Harmonic (Harmon) *see description that follows*

Arpeggiator Latch Ascending (ArLchA)

see description that follows

Arpeggiator Latch Played (ArLchP) *see description that follows*

About The Harmonic Scale

The Harmonic Scale is a 14-note scale that spans 4 octaves and contains those equal-tempered notes that most closely match the first 16 harmonics of the root pitch. After running past the 14 notes, the scale repeats at octave intervals. This scale sounds great when setting a ribbon to play notes with -None- for the aux destination (so it'll strum), holding the sustain pedal down, and wailing away on the ribbon. Set another ribbon section to send to CC note transpose (dest #43, NotOfs) so the scale can be transposed.

About The Arpeggiator Latch Scales

These allow you to play unsorted, latched arpeggiator notes. When Note Order is set to -None-, notes held in the arpeggiator

are copied to two scale tables, one in ascending pitch order (ArLchA) and the other in as played order (ArLchP). The copying takes place every arpeggiator clock beat rather than at the rate you play the notes.

The MIDI Destination List

Here are the Destinations, or “targets” for each controller, in scrolling order.

MIDI Controller Number	Destination	Function in a Typical Instrument (e.g., K2500)
None	Off	No value is sent
0	BkSelM	Bank Select MSB – sends a Controller 0 Bank Select message
1	ModWhl	Sends Modulation (Mod Wheel) messages
2	Breath	Default assignment for breath controller
3	MIDI 03	MIDI Controller #3
4	Foot	Sends Foot controller messages
5	PortTm	This changes portamento time on some monophonic sounds (if portamento is turned on)
6	Data	Some instruments use this as the default destination for a Data slider, and respond with changes in brightness or effects levels
7	Volume	MIDI Volume
8	Balanc	MIDI Balance
9	MIDI 09	MIDI Controller #9
10	Pan	MIDI Pan
11	Expres	MIDI Expression – a “subset” of MIDI Volume

MIDI Controller Number	Destination	Function in a Typical Instrument (e.g., K2500)
12, 13	FXCtl1 and FXCtl2	Control effects depth on some devices
14, 15	MIDI 14 and 15	MIDI Controllers #14 and #15
16-19	GPCtl 1–4	General-purpose Controllers 1–4
20–31	MIDI 20–31	MIDI Controllers #20–31
32	BkSelL	Bank Select LSB – sends a Controller 32 Bank Select message
<p><u>Special Function Controllers</u> This shaded section lists the ExpressionMate’s Special Functions. Note that these do not appear when you choose a Source for one of the MIDI Remap (MAP) Controllers. For full descriptions of these Special Functions, see page 52.</p>		
33	PBend+	Normal Pitch Bend
34	PBend-	Reverse Pitch Bend
35	PBend /	Pitch Bend up only
36	PBend\	Pitch Bend down only
37	ChnPrs	Sends Channel Pressure (also called Mono Pressure and Aftertouch)
38	PrgChg	MIDI Program Change
39	ZnXpos	Zone transposition
40	13Note <i>or</i> Note #	Sends one of 13 notes for a continuous controller or a specific note for a switch controller
41	37Note	Sends one of 37 notes
42	ScLen	Sends as many notes as are in current scale (selected with parameter 131: CCNoteScL)
43	NotOfs	Offsets the Note Controllers from C4
44	NotVel	Sets key velocity for Note Controllers

MIDI Controller Number	Destination	Function in a Typical Instrument (e.g., K2500)
45	NoteSw	Enables or disables the Note Controllers
46	NotScl	Controls parameter 131 CCNoteScl
47	ArXpos	Arpeggiator transpose. Controls parameter 16 transpose in Arpeggiator editor.
48	Arp On	Controls Arpeggiator parameter 4 Enable Sw.
49	Latch	Arpeggiator Latch Controller
50	Gliss	Arpeggiator Glissando Controller
51	Tempo	Arpeggiator Tempo Controller
52	Beats	Arpeggiator Clocks/Beat Controller
53	NotDur	Arpeggiator Note Duration Controller
54	ShfAmt	Arpeggiator Shift Amount Controller
55	ShfLmt	Arpeggiator Shift Limit Controller
56	ArpVel	Arpeggiator Note Velocity Controller
57-62	Strng1-Strng6	For sending arbitrary MIDI strings (MMsg1–MMsg6)
63	TTempo	K2500 Tap Tempo
64	Sustan	MIDI Sustain – holds notes that you play, like a piano’s sustain pedal does
65	PortSw	Enables portamento on some monophonic sounds
66	SostPd	Holds notes that are currently down, but not notes played subsequently
67	SoftPd	On some synths lowers the volume by a pre-set amount and may soften the timbre as well
68	Legato	Forces mono playback

MIDI Controller Number	Destination	Function in a Typical Instrument (e.g., K2500)
69	FrezPd	Envelopes freeze at current state
70	SndVar	Sound variation
71	Timbre	Timbre
72	RelTim	Release time
73	AtkTim	Attack time
74	Bright	Brightness
75-79	SCtl 6-10	Sound Controllers #6-10
80-83	GPCtl 5-8	General purpose Controllers #5-8
84	PortCt	Portamento control
85-90	MIDI 85-90	MIDI Controls #85-90
91	FX1 Dp	Controls wet/dry mix of FX1
92	FX2 Dp	Controls wet/dry mix of FX2
93	FX3 Dp	Controls wet/dry mix of FX3
94	FX4 Dp	Controls wet/dry mix of FX4
95	FX5 Dp	Controls wet/dry mix of FX5
96	Data+	Data Increment
97	Data-	Data Decrement
98	NRPLSB	NRPN (Non-Registered Parameter Number) LSB
99	NRMSB	NRPN (Non-Registered Parameter Number) MSB
100	RP LSB	RPN (Registered Parameter Number) LSB
101	RP MSB	RPN (Registered Parameter Number) MSB
102-119	MIDI 102-119	MIDI Controls #102-119

MIDI Controller Number	Destination	Function in a Typical Instrument (e.g., K2500)
120	SndOff	Sends “All Sound Off” message
121	CtlOff	Resets all controllers
122	LocCtl	Sends “Local Control On” or “Local Control Off” message
123	AllOff	Sends “All Notes Off” message
124, 125	OniOff	Sends “Omni Off” message
125	OmniOn	Sends “Omni On” message
126	MonoOn	Sends “Mono On” message
127	PolyOn	Sends “Poly On” message

Special Function Controllers

This section describes the Special Function Controllers listed on page 49, and gives some examples of how to use them. Most of these control internal functions of the ExpressionMate as described (and thus do not send any MIDI) but a few allow sending other kinds of MIDI messages that are not true “Control Change” messages.

Pitch Bend (PBend+)

This sends pitch bend messages, which let you raise or lower the pitches of notes. Values above 64 will raise a note’s pitch, while values below 64 will lower the pitch.

Keep in mind with all the pitch bend controllers, you must set the bend range on the *receiving* instrument, not on the ExpressionMate.

Reverse Pitch Bend (PBend-)

PBend- does the same thing as PBend+, but works in reverse. Values above 64 will lower a note’s pitch, while values below 64 will raise the pitch.

Pitch Bend Up or Down (PBend / and PBend\)

PBend/ and PBend\ will only raise or lower a note's pitch, respectively. A value of 0 equals no change in pitch, while 127 is full pitch bend. You may find that PBend/ and PBend\ make it easier to bend notes with controllers that have no obvious center, like breath controllers and CC pedals.

Channel Pressure (ChnPrs)

This sends Channel Pressure (also called Mono Pressure or Aftertouch). Many keyboards and sound modules will respond to Channel Pressure by adding vibrato or another effect to the sound.

Program Change (PrgChg)

This sends a MIDI Program Change, letting you use the Ribbon or another controller to change programs on the receiving instrument. You can also use Fixed controllers to link the Setup with a particular program on your synth, so that choosing the Setup on the ExpressionMate brings up the same sound every time.

On some synths, you actually have to send *two* messages to call up a program. First you send a Bank Select message (Controller 0 or Controller 32), followed by a Program Change. For instance, say you want to call up program 17 in set1, bank 2 on an instrument that uses Controllers 0 and 32 to select banks. You could set the Fixed controllers as shown below:

CONTROLLER	DESTINATION	ENTRY VALUE
FIX 1	BkSelM	1
FIX 2	BkSelL	2
FIX 3	PrgChg	17

When you select the Setup in Play mode, the ExpressionMate will send the Bank Select messages, followed by the Program Change.

Not all instruments respond as described above. Read your instrument's manual to find out which Bank Select and Program Change methods it uses.

Zone Transpose (ZnXpos)

Zone Transpose (ZnXpos) transposes the Zone. No transposition is a value of 64. To transpose up or down an octave, add or subtract 12 to 64. All of the ExpressionMate's transpose controllers work in a similar way.

Note Controller Destinations (13Note, 37Note, ScLen, Note #)

These Controller destinations, 40–42, let a Controller send a range of notes (13Note and 37Note), a user-defined number of notes (ScLen), or a single note (Note #).

Try setting the Ribbon's Destination to any of these Controllers, then create atonal music or "percussion jams" by randomly touching different points on the Ribbon. If you have a stage lighting system that uses MIDI notes to turn lights on and off, you can use the Ribbon or another controller to "play" your lights in time with the music, creating a killer stage show.

You can also use scales other than the default chromatic scale. You can even program your own scales (see page 83 for information on the Scale Editor) or use notes latched into the Arpeggiator as a temporary scale.

ScLen will play as many notes as are in the current scale; note lengths on the ribbon are determined by the scale selected with parameter 131: CCNoteScL. If you're using a User scale, then the length is determined by the Notes/Octave parameter in the scale editor. ScLen will only play the number of notes in the scale and the first note determined by the scale's Octave Size. The untransposed root pitch for ScLen is C4.

The quickest way to the Scale Editor from the Controller Editor, by the way, is to hold down the Learn button, then press Global.

Here are the normal, untransposed ranges for 13Note and 37Note:

CONTROLLER	MIDI NOTES	UNTRANSPOSED PITCHES
13Note	60–72	C4–C5
37Note	48–84	C3–C6

Controller 40 (13Note / Note #) and Switch or Fixed Controllers

You can send Controller 40 from a Switch or Fixed Controller, in which case its name is Note # (instead of 13Note). The On value is the note on and the Off value is the note off. To avoid unpredictable results, you should set the On value and the Off value to the same note number.

Velocity is determined by the CCNoteVel parameter or the NotVel controller. The value of CCNoteVel will be used until a NotBel controller is sent.

Note Offset (NotOfs)

This offsets the pitches of all Note Controllers in a Zone. A value of 64 sets the Controller to its normal range. If you want to shift the pitch up one octave (12 semitones) send a NotOfs value of 76 (= 64 + 12). To transpose down one octave, send a value of 52 (= 64-12).

Here's a more detailed example. Say you've set the Ribbon's Destination in Zone 1 to 13Note, but you want the notes to start on F4 and continue up to F5. In Zone 1, set SW1's On and Off Destinations to NotOfs, its On Value to 69, its Off Value to 64, and its Mode to Toggle. Now pressing SW1 will send the NotOfs value, and 13Note will send MIDI notes 65-77 (F4-F5). The button will stay on so that you can use two hands to play notes. When you turn the button off, 13Note moves back down to its normal range (C4-C5).

Note Velocity (NotVel)

NotVel sets the key velocity for all Note Controllers in a Zone. For instance, you might be using the Ribbon in Zone 1 to play notes, but you need the notes to play more loudly or softly in certain sections of a tune. You could set NotVel as the On and Off Destinations for a Panel Switch. You could then set the switch's On Value to 127 (full velocity), and its Off Value to something like 50 or 60. That way, you can switch between two dynamic levels.

If you want to vary the velocities as you play, try this: Go to Zone 1, and set Rbn Split to 3-SECT. Next, set Rbn 1's Destination to a Note Controller, and Rbn 2's Destination to NotVel. Then you can play notes with one hand, and change velocities with the other. If

you prefer to free up both hands for playing notes, you can assign NotVel as a Destination for the CC pedal or breath controller in Zone 1.

If a sound doesn't change at all when you send NotVel messages, make sure that the sound you're using responds to velocity. Most piano and other acoustic instrument sounds should respond by getting louder or softer. On some instruments, sounds that imitate synths and organs are programmed to ignore velocity, so you may need to edit those sounds, if possible.

Note Switch (NoteSw)

NoteSw turns all Note Controllers in a Zone on or off. Here's an example: Go to Zone 1, and set a controller's Destination to 13Note. Then assign SW2's On and Off Destinations to NoteSw, its On Value to 127, its Off Value to 0, and its Mode to Toggle. Now you can use that switch to enable or disable the playing of notes from the controller. This parameter does not affect the ribbon, which is always enabled, because touching the ribbon does that.

Arpeggiator Controllers

These Destinations control the Arpeggiator parameters: off/on, latch, glissando, tempo, clocks/beat, note duration, shift amount, shift limit, transpose, and note velocity. See Chapter 4.

MIDI Message Strings (MMsg1–6)

See page 109 for information about these parameters.

Controller Order

The ExpressionMate sends Controller messages in specific orders. The Fixed controllers are sent FIX1 first, FIX2 second, and FIX3 third. All Controller values, including Entry Values, are sent from Zones 1, 2, and 3, in that order. You can't change this, but you can take advantage of it, as shown in the Program Change example on page 53.

Saving Your Work and Exiting

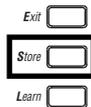
If you want to save the changes you made in the Controller Editor, or exit the editor entirely, read the section below. If you want to continue to the Arpeggiator Editor instead, read the next section.

A quick shortcut for updating within an editor is to press the Store button twice. Alternatively, you can press Store, then the right cursor button (>) to save the changes you've made to a new location.

Naming, Storing, and Exiting

Once you're done using the Controller Editor or Arpeggiator Editor, you can name and store your changes as a User Setup. You can also exit without saving changes.

The Store Button



If you want to name and store your work without leaving the editor, press Store, and you'll see this screen:

```
SU 3:   Rename?
Big Strum  OK
```



Note:

You can also name and save Setups from Play mode, by pressing the Store button, to bring up name and store dialogs. Press the Store button after reviewing and/or changing each screen.

If you want to rename the Setup, use the < and > buttons to move the cursor, and the data knob or - and + buttons to enter a name of up to 12 characters. While naming, you can use the following buttons for editing the name at the cursor position:

Controller	swap upper/lower case
Arpeggiator	insert a blank character
Global	delete character

When you're done, press **Store** again or move the cursor right until it reaches **OK**. You'll then see a screen similar to this:

```
SU 3: Store At?  
Big Strum * OK
```

Now you can renumber the Setup, or replace it in its current location. A star (*) next to the Setup number means that there's a User Setup in that location. Pressing **Exit** will cancel and return you to the editing page you were on. Press **OK** (>) or **Store** to save the Setup. When you're done, you'll return to the editing page that you were on.

The Exit Button



If you want to leave the editor, press **Exit**, and you'll return to Play mode. If you edited the Setup without saving the changes, there will be a star (*) next to the Setup name:

```
SU 3  
Big Strum *
```

The star means that you're still using the edited Setup, giving you a chance to play it and decide whether to keep the changes. To erase any edits you've made, hold down the **Learn** button, then press **Exit** again (while continuing to press **Learn**). Otherwise, if you try to choose a new Setup, you will be asked if you want to name and save the edited Setup first:

```
SAVE CHANGES?  
NO YES
```

Press **Yes** (>) to rename it and save it to a new location, or press **No** (<) if you don't want to save it. Press **Exit** to cancel the new Setup selection and keep playing the edited Setup. Press the **Controller** or **Arpeggiator** buttons if you want to do some more editing.

You can reload and send all the **Entry** values by pressing and holding **Store** then pressing **Exit**. The **ExpressionMate** will reload and send the setting from the last time you saved; it will not reload the **ROM Setup**.

Editing Hints and Suggestions

Do These Parameters Always Mean Something?

Be careful not to set up parameters that will do crazy things. When in doubt, leave things off, or at the factory default settings. On some of the higher-numbered MIDI controllers and Special Function controllers, the On and / or Off values don't have any meaning, because the controllers have very limited functionality. The following list shows these. ">0" means you can use any value that's greater than zero. "=0" means the value should be 0. "x" means you can use any value. "√" means that you must use a specific value:

MIDI Controller	On Value	Off Value
120 All Sound Off	x	x
121 Reset All Controllers	x	x
122 Local Control	>0	=0
123 All Notes Off	x	x
124 Omni mode Off	x	x
125 Omni mode On	x	x
126 Mono mode On*	√	x
127 Poly mode On	x	x

* The On Value, in some synths, specifies the number of MIDI channels to respond to, with one voice on each.

Do I Need All Those Controllers?

You don't have to plug in a physical controller to take advantage of it. Even if a physical controller isn't there, you can use its parameters to create additional "Fixed" controllers.

If you want to send commands that you know won't change while you're playing, assign Destinations and Entry and Exit values to physical controllers that aren't in use. When you choose

the Setup, the ExpressionMate will send those values as if the controller was in fact plugged in. (If the commands must go out in a specific order, read “Controller Order” on page 56.)

Assigning a Message to Multiple Controllers

Sometimes you will want to assign the same Controller number to more than one physical controller. For example, you might want to control modulation depth with either the Ribbon or a CC pedal. You can assign a particular MIDI message to as many controllers as you want. (You can also assign multiple messages to one physical controller. See “Stacking Zones” on page 25.)

Chapter 4

The Arpeggiator

The ExpressionMate's Arpeggiator is a powerful tool for spicing up your performances. The Arpeggiator creates arpeggio patterns based on notes that you've played. By using the many options of the Arpeggiator, and taking advantage of the fact that you can arpeggiate separately on the ExpressionMate's three zones, the possibilities are uncountable. You can use it with a sequencer, or you can use it completely live. The ExpressionMate's Arpeggiator is also fully interactive; you can choose how you want it to respond to the notes that you play.

Arpeggiator Quick Start

1. Start with one of the Factory Default Setups.
2. Double press the cursor buttons (one or more times) to jump to Arpeggiator parameter 4 "Enable SW". Turn the data knob to set this On.
3. Press the Arpeggiator button one or more times until the "1" light above the Arpeggiator button comes on. Notice also "Z1" on the top line of the display indicates the current zone.
4. Play a chord on your MIDI instrument and listen to the Arpeggiator's effect.
5. Press the right cursor button until the screen displays parameter 15 "Rhythm Select". Scroll through the list of rhythms and choose one you'd like to try.
6. Now go to the Shift Amount parameter (#10) and listen to its effect on your arpeggiations. Try changing the Shift Limit parameter and listen to its effect on the Shift Amount.
7. Finally, read the rest of this chapter to find out just how amazing the Arpeggiator really is.

The Arpeggiator Editor

Pressing the Arpeggiator button at the left of the front panel brings you into the Arpeggiator Editor. Its parameters are shown in the chart that follows.

Arpeggiator parameters

Parameter	Values
Tempo	Ctrl51, 30 to 600BPM
Low and High Key Range	C-1 to G#9
Enable Switch	Ctrl48, Off, On
Note source	In arp Zone 1 - MidiZ1, MidiZ2, MidiZ3, CCNot1, CCNot2, CCNot3, ArpOZ2, ArpOZ3. In arp Zone 2 - MidiZ1, MidiZ2, MidiZ3, CCNot1, CCNot2, CCNot3, ArpOZ1, ArpOZ3. In arp Zone 3 - MidiZ1, MidiZ2, MidiZ3, CCNot1, CCNot2, CCNot3, ArpOZ1, ArpOZ2.
Beats	Ctrl52, 1-Clk, 1/32T, 1/32, 1/16T, 1/16, 1/8T, 1/8, 1/4T, 1/4, 1/2T, 1/2, 1/1T, 1/1
Note Duration	Ctrl53, 3% to 400%
Latch Mode	Keys1, Keys2, OverPlay, Arpeggiation, Add, Auto1, Auto2, Auto3, Auto4, Toggle, Key Transpose 1, Key Transpose 2, Key Transpose 3, Key Transpose 4.
Note Order	Played, Reverse, Invert, Played and Reverse, Played and Invert, Up, Down, Up and Down, Up and Down+, Random Note, Random Order, Random Walk, Fractal Walk, Bin Walk, All, None.
Shift Amount	Ctrl54, -12 to 12
Shift Limit	Ctrl55, 0 to 88
Limit Option	Stop, Reset, Unipolar, Bipolar, Floating Reset, Floating Unipolar, Floating Bipolar.
Glissando	Ctrl50, Off, On
Note Velocity	Ctrl56, 1 to 127, Played, Last.
Rhythm Select	None, Funk 1, Funk 2, Rave 1, Rave 2, Dance 1, Dance 2, Beladi, Maqsum, User 1 to 64.
Transpose	Ctrl47, -64 to 64

Real Time Control of Arpeggiator Parameters

If you look at the chart above, you will see that many of the parameters can be set to a controller number, allowing you to change the value of the parameter in real time. These controller numbers (47-56) correspond to some of the special function controllers listed on the chart on page 48.

It is important to understand that these controllers are internal functions only - you must assign these functions to one of the ExpressionMate's physical Controllers (e.g., ribbon or pedal). The ExpressionMate will not respond to these controller numbers sent from an external source.

These controller numbers are "hard wired" to a specific function. If you assign a function to a Controller, and move that Controller, it will immediately affect the specific parameter. In other words, you do not need to assign an Arpeggiator parameter to its specific controller number in order for that parameter to respond to the controller. For example, If you assign Tempo to the ribbon, pressing the ribbon will immediately change the tempo - you do not need to assign the Tempo parameter to Ctlr #51.

So why do we give you the ability to assign a parameter to a controller number? This allows you to have the Controller determine the value of Tempo as soon as the Setup is called up. If you have set an Entry value for that controller, it will be sent when you call up the Setup. If there is no entry value, then the last known value (or Exit Value from the previous Setup) will be used.

There is one special exception to this feature of the controllers being "hard wired", and that is the Note Velocity parameter. If Note Velocity is set to a value of 0-127 or Ctlr #56, it will respond to real time control. But if it is set to Played or Last, it will NOT respond to real time control.

Tempo (Tempo)

Sets the Tempo for all three Zones. You can also change the Tempo using Ctlr51.

Key range (Low Key, High Key)

The low and high key determine the note range the Arpeggiator will see. You can set it so that one area of the keyboard will arpeggiate notes while the other will play normally. You can split the keyboard so each area arpeggiates one zone.

One thing to understand is that transposing the notes within a zone will affect how the key range parameters in the Arpeggiator function. Here is an example:

Start with Factory Setup 1, ABS Bend. Press the Arpeggiator button and scroll to the Key Range parameters, setting Low Key to C4 and High Key to C5. Now turn the SW2 button On. Play your keyboard and you will notice that the keys between C4 and C5 arpeggiate, while any other keys just play a single note.

Now press The Controllers buttons until the Zone 2 LED is lit. Scroll to parameter 1, MIDI Channel and set it to Mn2. Make sure that channel 2 on your sound source has a valid program assigned. Now when you play the keyboard between C4 and C5, you hear the zone 1 arpeggiating while zone 2 plays single notes. Next press the Controllers button until Zone 1 is highlighted and scroll to parameter 126 Nt Xpos. Set it to -7. Now if you play the keyboard, you will see that Zone 1 arpeggiates From G4 to G5 AND the pitch has been transferred down so that Zone 1 plays a 5th down in pitch from Zone 2.

Finally, press the Arpeggiator button and scroll to parameter 16 Transpose and set it to 7. Note the pitches of Zone 1 have been transposed back so that they are the same as Zone 2, but the arpeggiation still happens between G4 and G5.

Enable Switch (Enable Sw)

Turns on the Arpeggiator. It can also be turned on by Ctlr48.

Note Source (Note Src)

This determines where the Arpeggiator gets its note input from. Each Zone can see notes from any of the three Controller Zones note output, CC Notes or from another Arpeggiator Zone (Cascading Zones). The ExpressionMate cannot send notes from an arpeggiator Zone to itself nor can it see notes sent from the

panel switches or switch pedals. When cascading Zones, keep in mind the Note Duration of your Master Zone will have a great effect on the Cascaded Zones.

Another thing to note, if you have all three arpeggiator Zones set to MIDIZn1, not only will the ExpressionMate Arpeggiate the notes in Zones 2 and 3 it will play them normally if the MergUnPro parameter is set to Notes. This may not be what you want, however. To prevent this from happening set the Note Low Key to a value above the Note High Key in the Controller Editor. For more info on why this happens see the section on the MergUnPro parameter on page 81.

Keep in mind you might have to do some transposition in the Arpeggiator to put things just where you want them. This is because the Arpeggiator sees the incoming notes after the ExpressionMate's note processing in the Controller section, so remember that key ranges and transposition in the Controller Editor affect the Arpeggiator's note input.

Beats (Beats)

Sets the beat division the arpeggiation will be in. This ranges from whole notes to 1 clock pulse. If you send Ctrl52, you can set the ExpressionMate to arpeggiate in-between what is selectable in the Beats window, i.e., just a little longer than a 1/4 note. When a User Rhythm is selected the beats setting has no effect.

Note Duration (Note Dur)

This sets the length of time a note will sustain. You can set it to sustain up to 400% of beat value so if your Arpeggiator is playing 1/4 notes, each 1/4 note will sustain for four beats. This can have a dramatic effect when cascading the Zones. If you are using a User Rhythm then Note Duration scales durations set in the Rhythm Editor keeping the character of the Rhythm.

You can also use Ctlr53. A value of 32 is 100% if not using a rhythm, or no change from programmed durations if using a rhythm. Higher values lengthen the durations while lower values shorten them.

Latch Mode (LatchMode)

Latch Mode tells the Arpeggiator which of notes that you play should arpeggiate.

There are two main features of each Latch Mode. The first is whether or not it uses controller #49. Some Latch Modes will start arpeggiating as soon as you press the keys, while others will only start arpeggiating when you send controller #49 (the Latch controller) with an On value, and then will stop arpeggiating if you turn that controller Off. You can then assign controller 49 to a switch pedal or button in a Setup to Latch and Unlatch notes for the arpeggiator. (Most of the Factory Setups have Pedal 2 and SW2 assigned to controller 49. In addition, MAP1 remaps incoming sustain messages to latch, so you can use the sustain pedal on your keyboard to latch.)

The second main feature is whether or not the arpeggiator will resync the clock when you first strike a key. If the Latch Mode does resync the clock, then the arpeggiating will start the moment you strike a key and any subsequent keys will be arpeggiated in time with the clock. But once all keys are let up (or the latch controller is turned off), then the clock won't start again until the next key is pressed. But if the Latch Mode does NOT resync the clock, then the clock begins when you select the Setup and is always running whether or not you are playing any keys. Therefore, if you strike the key between the clock pulses, the ExpressionMate will wait until the next clock pulse to start arpeggiating the note. This allows you to play the keys less accurately but still have the notes triggered exactly in time.

One important thing to note: If you have the Arp Clock parameter in the Global Parameters menu set to an external clock, the all Latch Mode parameters will sync to that clock and will therefore the modes which normally resync on key start will NOT resync.

It is possible to Latch up to 16 notes. Once you start arpeggiating, each note you play is added to an internal list which the ExpressionMate remembers. In some latch modes, they will be removed from the list when you let go of the key, and in others, they will remain part of the list as long as the latch controller is turned On. If you play more than 16 notes, any extra notes will simply be ignored. If you press the same key more than once, each key press is remembered as a separate event in the list and

will be included in the arpeggiation parameter. Keep in mind that the Arpeggiator parameters may generate more than 16 different notes, based on the setting of the Shift and/or Glissando parameters. The 16 note limit applies to the actual notes that you play.

Latch Modes that use controller #49:

- Keys1*
- Keys2*
- Overplay
- Arpeggiation
- Add
- Auto3
- Auto4
- Toggle*
- KeyXp1 - KeyXp4

** These modes can also be used without the Latch Controller*

Latch Modes that do not use controller #49:

- Auto1
- Auto2

Latch Modes that Resync the Clock:

- Keys1
- Overplay
- Arpeggiation
- Add
- Auto1
- Auto4
- Toggle
- KeyXp3
- KeyXp4

Latch Modes that do not Resync the Clock:

- Keys2
- Auto2
- Auto3
- KeyXp1
- KeyXp2

Ctrl#49 and Latch Modes

As explained in the preceding section, to Latch is basically to grab notes for the Arpeggiator. This section explains how Latch controller #49 affects the different Latch Modes.

Keys1 - This latch mode can be used with or without the latch controller (#49). If the latch controller is turned off, then it works very simply. If you press one or more keys, they will be arpeggiated. As long as a key is held, it will be included in the arpeggio. Once you let go of the key, it is no longer arpeggiated. This means you can play a four note chord and have all four notes arpeggiated, then let go of one key, it will drop out of the arpeggio but the remaining three notes will continue to arpeggiate. If you let go of all keys, then the clock is resynced as soon as you press a new key.

If you use Ctrl #49 with this mode, then the following applies:

Any keys that you are holding when Ctrl #49 is turned On will continue to arpeggiate when you let go of the keys. If you then turn Ctrl #49 Off (after having let go of the keys), all arpeggiation stops. This feature allows you to start arpeggiating by playing a chord, step on a pedal assigned to Latch, then let go of the keys and get ready to play a new chord, then let go of the pedal and play the new chord to start a new arpeggio. (This assumes the pedal is set to be a Momentary switch instead of Toggle.)

Any notes played after the Ctrl #49 is turned On will play normally and not be arpeggiated. This means that if you turn the latch On before playing any notes, you won't hear any arpeggiation. This also allows you to start a chord arpeggiating, turn on the latch, then play a melodic line on top of the arpeggio.

Another feature of this mode is that the note order is reset to the first note when Ctrl #49 is turned Off. So again, using our example of a momentary pedal being set to Latch, you can hold a chord, and then press and release the pedal. Each time you let go of the pedal, the pattern of the notes will begin from the first note in the pattern. If you are using one of the Preset or User Rhythms, this allows you to change the order of notes within the rhythm.

Ctrl#49 Off->On while keys are held then releasing the keys:

This will arpeggiate the pattern being played up to 16 notes. Keep in mind, you can hear a lot more than 16 depending on how the Arpeggiator is set, but its pattern is built from those 16 notes. As long as Ctrl#49 is on added notes you play will sound normally and will not be arpeggiated. When Ctrl#49 is turned On->Off and you are not playing any keys, the pattern stops. If you hold keys down and turn off Ctrl#49 the notes you are playing will begin to arpeggiated.

Ctrl#49 Off->On while keys are played and held:

Play a chord and turn on and off Ctrl#49 without releasing the keys. Each time you turn Ctrl#49 on and off, upon the release of Ctrl#49, the Arpeggiator resets the note order to the first note seen. This allows you to change the order of the notes within the rhythm being arpeggiated.

Keys 2 - Works the same way as Keys1 except the clock is never resynced.

OverPlay - This mode requires Ctrl #49 in order to hear the arpeggiation. When you play notes with Ctrl #49 turned Off, they sound normal and are not arpeggiated. When you turn Ctrl #49 On, the clock is resynced, and any notes currently being held will be arpeggiated. Any notes played after Ctrl #49 is turned On will be played normally and will not be arpeggiated, allowing you to “play over” the arpeggio. This Overplay feature is very similar to the Keys 1 and Keys 2 modes - the difference is that notes played when Ctrl #49 is Off are not arpeggiated whereas in the Keys modes, they are.

Arpeggiation - No sound is heard until the Ctrl#49 is turned on. Once Ctrl#49 is on any keys held will begin to arpeggiate and the clock is resynced. Added notes will join the arpeggiation but will not latch into the pattern. When you release the added notes they will no longer play in the arpeggiation.

Add - Notes first played sound normal. Notes held when Ctrl#49 is turned on will begin to arpeggiate. Added notes will be added and latched into the arpeggiation up to 16 notes. Turn off Ctrl#49 to stop the arpeggiation.

Auto1 - The first notes you play resync the clock. As long as one key is held, up to 16 notes can be arpeggiated. When you release all keys the arpeggiation stops. The next key played will then resync the clock. Ctrl#49 has no effect on Auto1.

Auto2 - is the same as Auto1 except the clock is never resynced.

Auto3 - The clock is never resynced in this mode. Any keys played are arpeggiated and continue to arpeggiate even when keys are released. Look mom no hands. Those keys will sound until the next note, or group of notes up to 16, are played. Once the new group is played, they begin to arpeggiate. Ctrl#49 must be turned Off to stop the arpeggiation.

Auto4 - Same as Auto3 except the clock is resynced when a note is played. Ctrl#49 stops the arpeggiation.

Toggle - When you strike a note it arpeggiates even if the key is not being held. To stop the arpeggiation play the same note again. Each note is its own on/off switch to the arpeggiator. You can arpeggiate up to 16 notes. Ctrl#49 will resync the clock. If a Latch controller is connected and assigned, turning it off will also stop notes that have been toggled on.

KeyXp1 - KeyXp means Key Transpose. If you play a chord and turn on Ctrl #49, the intervals between the notes are remembered by the arpeggiator. The first key you played becomes the root; when you play a different note, the Arpeggiator will transpose the intervals to the new root.

For example, play a C major chord making sure you play the C first; keep in mind you won't hear anything. Turn on Ctrl #49 as you hold the C E and G and you will hear the arpeggiation. Now release the keys and keep Ctrl#49 on. Play a G note a fourth below the C. The ExpressionMate will begin arpeggiating G B D and stop when the key G is released. To enter a new set of notes, turn off Ctrl#49 and play a new chord and turn Ctrl#49 on again.

KeyXP2 - The clock is never resynced and the notes arpeggiate like Auto3. Turn off latch to stop arpeggiation.

KeyXP3 - Like KeyXP1 but the clock is resynced like Keys1.

KeyXp4 - Like KeyXP2 but the clock is resynced like Keys1.

Note Order (NoteOrder)

Note Order tells the ExpressionMate what order it will arpeggiate notes.

Played (Played): Notes play out same order as played in.

Reverse (Revrse): Notes play out reverse of order played in.

Invert (Invert): First note played sets “reference pitch.” Subsequent notes play out “mirrored” around the reference. For example, playing a C major triad (C, E, and G) will give you the C chord plus the A flat and F below the C.

Play and Reverse (Ply&Rv): As played and reverse orders alternate.

Play and Invert (Ply&Iv): As played and inverted pitches alternate.

Up (Up): Upwards arpeggiation.

Down (Down): Downwards arpeggiation.

Up and down (Up&Dn): Upwards and downwards arpeggiation with no repeat of top and bottom notes.

Up and Down Plus (Up&Dn+): Upwards and downwards arpeggiation with repeat of top and bottom notes.

Random Note (RndNot): Any latched note may be played out with equal probability.

Random Order (RndOrd): No note will be replayed until a cycle completes. A “cycle” is after N notes are played (N=number latched). If you are using a shift of an octave then it will play the notes in the first octave in a random order then play the new random pattern in the second octave.

Random Walk (RndWik): Random direction and step from last note played, with uniform distribution of step size. Bounces at highest and lowest note latched. The cycle ends when a low bounce has followed a high bounce.

Fractal Walk (FrcWik): Random direction and step from last note played, with short steps more likely.

Binary Walk (BinWlk): Random direction from last note played. Step is always 1.

All: Plays all notes simultaneously on each beat, up to a maximum of 6 notes. Be careful, since this can overrun maximum MIDI speed, slowing everything down.

None: Notes in the list are not played. Typically used in conjunction with the Arpeggiator scale selection for playing notes on the ribbon.

When set to none you can use the CC Note scales ArLchP and ArLchA to set a temporary scale of the notes latched in the Arpeggiator. This can be used to create strumming type effects or to feed this zone to another Arpeggiator zone to add rhythmic elements to CC notes that relate to what you are playing on your keyboard.

Shift Amount (Shift Amt)

This sets the amount the Arpeggiator will transpose the pitch of its pattern. Set to 0 it will arpeggiate only the pitches you play. You can set it over a range of plus or minus one octave.

The Shift Amount is added after each cycle (that is, each full run through the specified note order) completes. If the Shift Amount is set to a value higher than the Shift Limit and the Limit Option is set to Stop then the ExpressionMate will arpeggiate the notes played at the original pitch and stop.

Shift Limit (ShiftLimt)

The brakes for the shift amount. It tells you how far from the original note the arpeggiator will play. When the limit is reached the limit option comes into play.

Limit Option (Limit Opt)

Stop: If this option is set to Stop, then once the Shift limit is reached the Arpeggiation stops.

Reset: When the Limit is reached, the Arpeggiation goes back to the original pitch and plays the pattern again.

Unipolar (UniPlr): Unipolar plays the pattern up to the limit and then turns around and plays it the from the Limit to the original note using the same interval. This pattern will repeat until you stop.

Bipolar (BiPlr): is similar to UniPolar. It goes from the original pitch to the limit and back to the original pitch, but here it will continue past the original pitch until it reaches the limit in the opposite direction and then cycle back to the original pitch.

Float Reset (FltRes): Adds a bit of apparent randomness to the process. "Flt" stands for Float, and it means that when the Arpeggiator reaches the Shift Limit, it doesn't necessarily reset to the original pitch. Instead, it looks at the first note that would exceed the Shift Limit, and calculates the interval between it and the Shift Limit. It then starts the cycle over again, but instead of starting with the first original pitch, it transposes that pitch by the interval it just calculated and continues from there.

The range of "Float" is bound with in the shift limit. The ExpressionMate will cycle from the original pitch once the Float has hit the Shift Limit.

Float Unipolar (FltUni): Applies the "Float" to the Unipolar option.

Float Bipolar (FltBip): Applies the "Float" to the Bipolar option.

Glissando (Glissando)

When the Glissando is turned on either in the Editor or by Ctlr#50 it will play notes chromatically from the original pitch to the limit. The limit option will affect the order of the notes. Try using "Played" for the arpeggiated note velocities when using Glissando.

Note Velocity (Note Vel)

This sets the volume of the notes being played by the arpeggiator. Played will arpeggiate the notes at the velocity played on your controller, Last will play the Arpeggiator at the velocity of the last key struck. You can also control volume using Ctlr56.

Rhythm Select (RhythmSel)

This selects one of the 8 ROM Rhythms or one of the 64 User Rhythms. You can also set this parameter to -None-.

The ROM Rhythms are:

- Funk 1
- Funk 2
- Rave 1
- Rave 2
- Dance1
- Dance2
- Beladi
- Maqsum

User Rhythms 1 – 8 are copies of the ROM Rhythms that you can use as starting points for your own creations. See page 84 for information on using the Rhythm Editor to do this.

The quickest way to the Rhythm Editor from the Arpeggiator, by the way, is to hold down the Learn button, then press Global.

Transpose (Transpose)

This transposition is for the Arpeggiator only. You can play in a group of notes and have the Arpeggiator play its arpeggiation an interval higher or lower than the notes it receives from the Controller editor. It can be adjusted real time with Ctlr47.

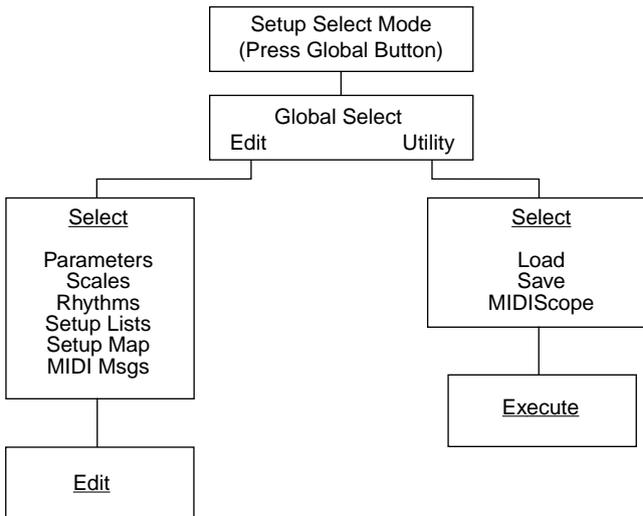
Chapter 5

Global Functions

Besides the parameters for each Setup, there are numerous parameters that affect *all* Setups. They are divided into two groups:

- **Global Objects** – These include Global Parameters, User Scales, User Rhythms, Setup Lists, Setup Map, and MIDI Messages.
- **Global Utilities** – These include commands for reloading factory Setups, saving Setups with MIDI System Exclusive dumps (commonly called SysEx dumps), and MIDIScope®.

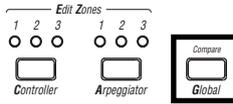
Refer to the chart below whenever you need to find a Global function.



Getting Around

You use the < and > buttons to scroll through parameter lists, and to choose options from some menus. You use the data knob and the - and + buttons to change or enter values. In some cases, you can also hold the Learn button, and enter values using the Ribbon or another continuous controller. Changes to Global parameters take effect immediately; you don't have to save them.

Global Parameter Set



While in Play mode, press the **Global** button, and you'll see this screen:

```
-GLOBAL SELECT-
EDIT    UTILITY
```

Press **Edit** (<) then press **Select** (<) to scroll through the list of objects. When "EDIT Globl ParmS" appears on the top line of the display, press **Edit** (>) to begin editing Global parameters. The first parameter is Contrast, as shown here:

```
GLOBAL 1:25
CONTRAST :25
```

The table below summarizes the Global parameters:

Parameter	Range of Values
Contrast	0-64
Drum Sync	Off, 5 to 50 milliseconds
RBN Dir	Left, Right
MainMrgTo	Off, Main, Aux
MainMgOpt	Neithr, SysEx, RealTm, All
Aux MrgTo	Off, Main, Aux
AuxMrgOpt	Neithr, SysEx, RealTm, All
MergUnPro	Notes, Cntrls, Both, Neithr
Arp Clock	Int, Main, Aux

Parameter	Range of Values
Send Clks	Off, Main, Aux
Ext PgmCh	None, Main1-16, Aux1-16
Pgm BkLSB	0-127, Ignore
Pgm BkMSB	0-127, Ignore
ZxNotesIn	Off, M1-16, X1-16
ZxMCtIsIn	Off, M1-16, X1-16
SYS EX ID	0-127, none
SysEx Ers	0-255

Contrast

This sets the LCD contrast. The range of values is 0-64, with 0 lightest and 64 darkest. The default value is 25.

Drum Sync

Pedal 1 can be connected to a drum trigger or a footswitch and either can be used to control the tempo of the internal arpeggiator clock. The ExpressionMate automatically detects which kind of sensor by the kind of 1/4" plug used.

If you use a mono plug (just tip and sleeve), a normally-open switch pedal is assumed to be connected to it. The trigger point is a transition from open to closed (pedal downstroke). Note that normal Pedal 1 functions are still available even when triggering the arpeggiator.

If you use a stereo plug (tip, ring, and sleeve), then an analog drum trigger is assumed connected between the tip (+) and sleeve (-) with the ring open-circuited. A positive pulse greater than 1.5 volts and wider than 2 milliseconds to the tip will trigger. Note that most independent drum trigger units are probably equipped with a mono plug. So to work with the ExpressionMate, a 2X1/4" mono female to 1/4" stereo male Y-adaptor will be needed and the trigger should be plugged into the Left (tip) member of the Y.

The “Drum Sync” parameter has a range of 5-50ms and OFF. To use drum sync, select a value other than OFF (10-20ms is a good start), set the Arp Clock (Global Parameter 8) to Int., and plug a sensor or pedal into Pedal 1 as described above. As long as there are no trigger events, the internal clock will run just as before with its tempo set by Arpeggiator parameter 1 and values sent to destination #53.

Once two trigger events closer together than 2.5 quarter-note beats are seen, the tempo will change to track the trigger events. If there is a pause in the triggers greater than 2.5 beats, the tracking stops until another pair of events is seen. Convergence to the tap tempo is fairly rapid - the maximum adjustment per trigger is 50% either way.

The “Drum Sync” parameter value actually controls the duration of a “dead time” after each trigger. During the dead time, another trigger cannot be recognized. This can be used to eliminate double-triggering due to noise and echoes when using the drum trigger.

RBN Dir

You can set the Ribbon’s direction to Right or Left. If the direction is Right, you send higher Controller values toward the Right end of the Ribbon (the end with the cable). If the direction is Left, you send higher Controller values toward the left end of the Ribbon.

We’ve assumed that you will place the Ribbon so that as you face it, its cable comes out of the right end. However, you can turn the Ribbon the other way, in which case you may want to set RBN Dir to Left.

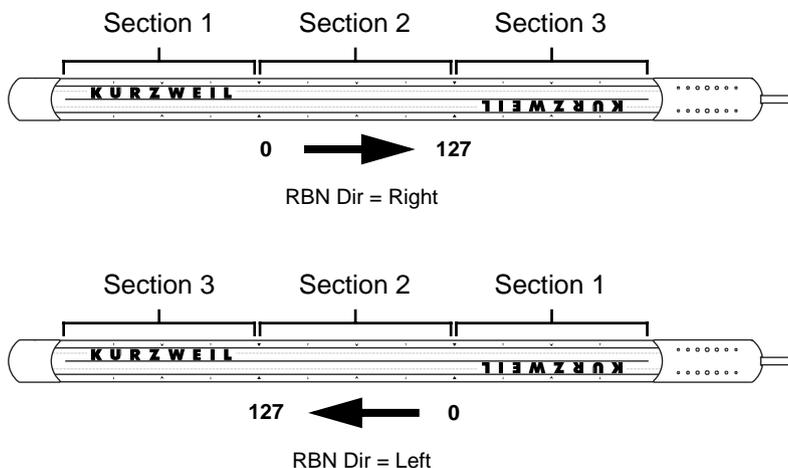


Figure 5-1. RBN Dir settings.

MIDI Merging

If you look at the back of the ExpressionMate, you'll see that it has two MIDI interfaces: the Main interface and the Aux interface. Each interface lets you send incoming data to either MIDI Out port, along with any internal messages that you generate with ExpressionMate Setups.

There are lots of uses for this; for instance, you might want to send several sets of messages to an instrument with only one MIDI In port. You could also send messages from different instruments to just one track on a sequencer. There are other possibilities too.

The ExpressionMate can merge all kinds of MIDI messages, including Realtime messages and SysEx.

MainMrgTo and Aux MrgTo

The **MainMrgTo** and **Aux MrgTo** parameters tell the ExpressionMate where to send messages that it *receives* at the Main In port or Aux In port, respectively. You have three choices for each:

- Choosing **Off** disables merging for the input. The ExpressionMate will respond to messages received at the

MIDI In port, but won't send them directly to either MIDI Out port. (There are exceptions: see the MergUnPro, ZxNotesIn, and ZxCtlIn parameters below.)

- Choosing **Main** will take all of the messages coming to the interface's MIDI In port, and send them to the Main Out port.
- Choosing **Aux** will take all of the messages coming to the interface's MIDI In port, and send them to the Aux Out port.

Here's one example: say you have a keyboard connected to Main In, and MIDI drums connected to Aux In. You want play from both instruments, merge all the notes with the ExpressionMate messages, and send everything to a MIDI sound module that's connected to Main Out. Set both MainMrgTo and Aux MrgTo to **Main**. Now the ExpressionMate sends all external and internal MIDI data to the Main Out port, which in turn sends everything to the module.

MainMgOpt and AuxMrgOpt

These parameters let you choose whether the Main and Aux interfaces will merge Realtime messages (Clock, Start, Continue, Stop, Active Sensing, Reset) and SysEx. There are four choices:

- **Neithr** prevents the interface from merging both Realtime and SysEx messages.
- **SysEx** allows the interface to merge SysEx messages.
- **RealTm** allows the interface to merge Realtime messages.
- **All** lets the interface merge all MIDI messages.

Remember that these options act *only* on merging; MIDI clock data still passes through to the Arpeggiator, and SysEx is still recognized when you reload Setups.

A Word About SysEx and Merging

Long SysEx messages (those longer than 250 bytes or so) cannot be merged simultaneously. Also, while a SysEx message is being merged into an output, other ExpressionMate messages are blocked at that output. For SysEx messages under 250 bytes, you probably won't notice this.

Merge Unprocessed (MergUnPro)

MergUnPro lets you choose what to do with notes that are intercepted by the Arpeggiator and/or note processor. When you merge notes and/or controllers, both the processed and the unprocessed notes will be output. When you do not merge, only the processed notes are sent to the output.

You can merge notes, controllers, both or neither. The default is Notes which lets you take full advantage of the ExpressionMate's velocity curves and note mapping features. Keep in mind that if you are remapping pitch bend to another controller and the MergUnPro is set to Cntrls or Both, the pitch bend will be sent as well as the remapped controller.

Arp Clock

This is where you set the source of the Arpeggiator's clock. It can receive the clock over the Main or Aux MIDI In; the default is the ExpressionMate's internal clock.

Send Clock (Send Clks)

Use this option to send the ExpressionMate's internal tempo clock (at 24 clocks per beat) to either the Main or Aux Out. The default is Off, which is generally a good setting, since sending clocks can use up almost 10% of MIDI's bandwidth.

Program Change Parameters

You can change Setups by sending Program Change messages from an external device, such as a sequencer or keyboard. Several parameters determine how the ExpressionMate will respond to these program changes.

Ext PgmCh

This option determines whether the ExpressionMate will respond to external Program Change messages, and on which channel (Main 1-16 or Aux 1-16). The available values are None, Main1-16, and Aux1-16.

Pgm BkLSB, Pgm BkMSB

Pgm BkLSB and **Pgm BkMSB** tell the ExpressionMate how to respond to MIDI Bank Select messages. Each may have a value of 0–127 or Ignore.

- When both are set to Ignore, the ExpressionMate will respond to program changes from 0 to 127, on the channel specified by Ext PgmChg.
- When Pgm BkLSB is set to Ignore but Pgm BkMSB is set to a number, first send a Controller 0 message with the same value as Pgm BkMSB. Then send the program change.
- When both Pgm BkLSB and Pgm BkMSB are set to values, first send a Controller 0 message with the same value as Pgm BkMSB, and a Controller 32 message with the same value as Pgm BkLSB. Then send the program change.

In most cases you will want both of these parameters set to Ignore.

ZxNotesIn

These parameters set the channel on which the zone receives MIDI note information.

ZxMCtlIn

These parameters set the channel on which the zone receives MIDI controller information. This must be set to a channel to use the ExpressionMate's controller remapping features.

SYS EX ID

This sets the SysEx Device ID for the ExpressionMate. The range of values is 0–127, or none.

You must set the Device ID of the ExpressionMate to the same number both when dumping and reloading Setups. The same is true when sending Setups from one ExpressionMate to another: they must have the same Device ID.

You can sometimes avoid problems by setting the Device ID to 127. In MIDI-speak, this means "broadcast to all units," so *any* ExpressionMate on the MIDI cable will receive the Setup data. (You might not want to do this if you have multiple ExpressionMates that you want to keep different from each other.)

SysEx Ers

This parameter is set to zero on power-up and is incremented whenever a SysEx message is rejected because of a checksum error. You can manually edit the value back to zero at any time. Check the value of this parameter after a SysEx load to verify that all data was received correctly.

Exiting Global Edit Mode

You can leave Global Edit mode at any time by pressing the Exit button. This returns you to the Global Select menu where you can select a different object to edit. Press Exit again to return to Play Mode. Changes to Global parameters take effect immediately, so you don't need to save them.

Other Global Objects

These include the User Scales, User Rhythms, Setup Lists, Setup Map, and MIDI Messages. MIDI Messages are discussed in Appendix A. The remaining Global Objects are described in this chapter.

User Scales

The ExpressionMate offers you 8 user-editable scales in addition to the 16 standard scales described on page 47.

To enter the Scale Editor from Play mode, press the **Global** button, then press **Edit** (<) followed by **Select** (<) to scroll through the list of objects. When "EDIT Scales" appears on the top line of the display, press **Edit** (>). Press the left cursor (<) to select the scale you want to edit and then press the right cursor (>) to begin editing that scale. Remember that the scales, like all of the global parameters and tables, are edited "live". This means that the changes you make will take effect immediately.

When you enter a scale you will see

```
Notes/Octave= 7
PREV          NEXT
```

Use the left and right Cursor buttons to move through the editor, using the +/- buttons, the Spin knob, or Intuitive entry to change the values.

The Notes/Octave parameter sets the number of notes in the scale. You can choose from 1 to 16. As examples, 12 could be a chromatic scale, 5 a pentatonic, and 7 a major or minor scale.

Octave size determines the transposition of the scale. Technically this is the transposition, in semitones, that is added after all of the notes in an octave are used. Typically it is 12 but can be from 0 to 24. For example, if you use a scale that is three notes long and set the Octave size to 7 with CC Note Ctlr#41 37Note, the first three notes will be at the bottom end of the ribbon. As you slide your finger along the ribbon, every three notes will transpose up the fifth. So if the scale is playing C E G, the next three notes would be G A D followed by D F A and so on up to 37 notes.

The next window is one of the 16 Step windows.

```
Step  1 Intvl  0
PREV                NEXT
```

The top left tells you what step you are editing and the top right tells you the interval you have chosen. You can select from 0 to 24; two octaves, in other words. With no transposition, 0 is C4. 1 would be the half step above that, C#4. Intervals can be put in any order in the 16 steps. For example, a major scale would have the values:

0, 2, 4, 5, 7, 9, 11

Press Exit and the display goes back to the CC Note scale select screen. Press Exit again or the Global button to return to the Global edit select screen and one more time to the Setup select screen.

To hear changes to a Scale you are editing, setup a RBN section to one of the CCNote controllers and Select the CCnote User scale you want to work with. You can exit to the Globals or use the Shortcut to the Scale Editor from the Controller Editor (press Learn and then the Global button to enter the Scale Editor; press the global button to exit back to the Controller Editor; Press Exit to go back to Play Mode).

User Rhythms

In addition to the eight ROM Rhythms provided with the ExpressionMate, you can also create your own User Rhythms to use with the Arpeggiator. For your convenience, User Rhythms 1 – 8 are copies of the ROM Rhythms. There's a complete list of these rhythms on page 74.

An ExpressionMate Rhythm has a Beat Value parameter, Number of Steps parameter, and up to 16 steps, each consisting of a Length and a Duration.

The Beat Value specifies how many clocks constitute a beat. Possible values are 1 - 96. The standard value of 24 displays as "1/4" and other "round" values display as other musically meaningful time values including dotted durations and triplet (T) durations. Odd clock values, like 15, are displayed as "15Clk".

The Number of Steps specifies how many of the following steps constitute a rhythm cycle. From 1 to 16 may be specified. Set this first before editing the steps because steps beyond the specified number are hidden by the editor.

When you select a step for editing, the screen shows 4 things about the step:

1. The step number, "Stp XX"
2. The cumulative total beats from step 1 up to and including this step, "Tot=xx.xx"
3. The length of this step in beats, "X.XX".
4. The duration of notes started by this step, also in beats, "X.XX".

Length specifies how long before the next step starts. Duration specifies how long notes begun when this step starts will sound and can be either shorter or longer the length of the step.

Both length and duration are stored as a number of clocks, from 1 to 96. The length and duration display is in terms of beats to reduce the amount of mental arithmetic one must do. Thus if the Beat Value is 24 and a step's length is 12, then that step's length will be displayed as 0.50.

The "Tot=XX.XX" display lets you know how many beats have been "accounted for" up through this step. If you want 4 beats per rhythm cycle for example and you've specified 8 steps, then the "Tot=" field should show "4.00" when the 8th step is displaying for the rhythm's timing to be correct. Nothing enforces this rule however so it is easy to get some very whacky sounding rhythms.

Note that the Beat Value DOES NOT influence the sound in any way. If you change it, you will not hear an effect. All the Beat Value does is to help display the length and duration of steps in a more meaningful way. So if you want to make a given rhythm go

double-time, for example, first change the Beat Value to half its original value (likely to 1/8 from 1/4), then re-edit each step to restore the original length and duration.

Entering the Rhythm Editor

To enter the Rhythm Editor from Play mode, press the **Global** button, then press **Edit** (<). Press **Select** (<) several times to scroll through the list of objects. When "EDIT Rhythms" appears on the top line of the display, press **Edit** (>), then press the **Select** and **Edit** buttons again to begin editing the desired rhythm.

The ExpressionMate will briefly display:

```
Global = Toggle
Length/Duration
```

This is a reminder that the Global button toggles between editing a step's length or duration.

The first window is:

```
Beat Value 1/4
PREV          NEXT
```

You can adjust this with +/ - or the spin knob. The cursor buttons will take you though the other windows.

The Beat Value only affects how your rhythms are displayed, it makes no change in how your rhythm will sound. The Default is 1/4, meaning a value of 1.00 is equal to one quarter note. If the Beat value was set to 1Clk then 1.00 would be equal to one clock pulse.

The next window is:

```
# of Steps 4
PREV        NEXT
```

This is where you enter the # of steps for your rhythm; you can have up to 16.

The next window is:

```
Stp 1 Net = 1.00
L=1.00    D=0.75
```

Stp tells you what step of the rhythm you are editing.

Net tells you the total length of time your rhythm takes up to the step you are editing. In this example we are looking at step 1 which has a length value of 1.00 so that is the Net. If Steps 2 and 3 had length values of 0.50 then the Net in Step 3 would be 2.00.

L= displays the length of time the rhythm will wait before playing the next step.

D= tells you the duration of that step's note. It can be up to 4 times the Length.

Example

Beats: 1/4

of steps: 3

Step 1: L= 0.25 D= 0.03

Step 2: L= 0.25 D= 0.50

Step 3: L= 0.50 D= 0.25

Step 1 will play a staccato 16th note.

Step 2 will play a 16th note with a duration that holds the length of an 1/8th note.

Step 3 will play a 1/8th note with the duration of a 1/16th note.

Both steps 2 and 3 will stop their notes at the same time.

Ctlr53 scales the rhythm duration from 3% to 400% of the D values. A value of 32 plays the duration specified in the rhythm editor. If you increase the value above 32, the ExpressionMate will scale each duration for each step, keeping the character of the rhythm. The maximum duration of any note after scaling, however, is 255 clocks.

Setup Lists

To edit the Setup Lists from Play mode, press the **Global** button, then press **Edit** (<) followed by **Select** (<) to scroll through the list of objects. When "EDIT Setup Lists" appears on the top line of the display, press **Edit** (>). As we mentioned in Chapter 2, Setup Lists are a way to organize Setups so that they're easier to find during live performances. Choosing this command lets you edit

Setup Map

these lists so that they contain the Setups you want. There are three lists containing 16 Setups each, for a total of 48 Setups.

```
SETUP LIST 1:12  
3 Mono-Poly Sw
```

The top line shows which Setup List you're editing, followed by the Step within that list. The bottom line shows which Setup is in the current Step. Press the < and > buttons together to choose which list to edit. Press either the < or > button to scroll through the 16 Steps in each list. Use the data knob and -/+ buttons to change the Setup in each Step.

Setup Map

The Setup Map routes incoming MIDI program changes to ExpressionMate Setups. To edit the Setup Map from Play mode, press the **Global** button, then press **Edit** (<) followed by **Select** (<) to scroll through the list of objects. When "EDIT Setup Map" appears on the top line of the display, press **Edit** (>).

```
MIDI PROG CH 111  
48 Iceblink
```

Each of the 128 possible program changes (0-127) has an associated ExpressionMate Setup number, or None. To access them using an external MIDI device, you send program changes to the port, channel, and program bank set in Global Parameters. With Setup Map, you can synchronize the ExpressionMate's Setups with sound setups on a synthesizer, then use an external program change command to call up the appropriate ExpressionMate Setup when you select a sound on your synthesizer.

Also, some older instruments can't send enough program change commands for you to access all the Setups in the ExpressionMate. For instance, your keyboard might only transmit program changes 0 through 63. If you want to use that keyboard to call up Setup 64, assign the Setup to MIDI PROG CH 63 or lower:

```
MIDI PROG CH 63  
64 SlowDrive
```

Note that the ExpressionMate will respond to program changes only when you're in Play mode.

Saving and Reloading Setups

Global Utilities let you load and save Setups and view MIDI operation with MIDIScope (described on page 92). Loading

SysEx (e.g., Setups you've saved to another MIDI device) does not require a special a Global Utility. For your convenience, however, we've included the procedure in this section.

Saving Setups (SysEx Dumps)

Even though ExpressionMate's memory is battery-backed, it's still a good idea to regularly save the Setups that you edit and create. You may also need to free up memory for creating and storing more Setups.

You can use SysEx (System Exclusive) dumps to save Setups to an external storage device, such as another ExpressionMate or a sequencer that can record SysEx messages. You can then recall the Setups at a later time.

Make sure that ExpressionMate's Main MIDI Out is connected to the storage device's MIDI In. Also, if dumping from one ExpressionMate to another ExpressionMate, check that the SysEx ID is set correctly for both devices (see "SYS EX ID" on page 82 for details on doing this). Regardless of the device you are dumping to, however, make note of the ExpressionMate's SysEx ID, because you will need it when you reload the SysEx. The default SysEx ID is 1.

Each Setup uses a separate SysEx message, so that each message is as short as possible.

To save Setups as system-exclusive messages, press the Global button when in Play mode. First you'll see this screen:

```
-GLOBAL SELECT-
EDIT     UTILITY
```

Then press **Utility**, followed by **Select** to scroll through the list of the ExpressionMate's utilities. When **Save Setups** is displayed on the top line, press **Execute**.

You will be presented a screen such as the following:

```
-SYSEX SAVE SEL-
*Globl, SU XX-YY
```

The bottom line shows the objects currently selected for saving. If there is an asterisk (*) beside "Globl" then the globals have been selected. Sysex dumps of the globals include all global parameters and everything else that may be edited with the global editors including Scales, Rhythms, Setup Lists, the Setup Map, and MMsg strings.

The number range, “XX-YY” specifies which Setups have been selected to save. The left and right buttons move the cursor to any of these 3 fields and the field’s value may be changed with the spinknob and inc/dec buttons in the usual way.

To save just a single Setup, set both XX and YY to that number. To not save any Setups at all (for example to save just the globals), make the range backward, i.e., “20-10”.

When the cursor runs off the screen to the right or the Store button is pressed, system-exclusive messages are sent out the Main MIDI port and a progress screen is displayed. The data is broken up into messages of 32 memory bytes each sent at about half MIDI speed so as to not overload sequencers, mergers, etc., that may be in the system. Speed is about 1 Setup per second. When the save is completed, you are returned to Play mode.

Canceling a SysEx Dump

If you need to cancel the dump for some reason, press Exit. Dumping will stop after the current Setup is dumped, and you will return to the SysEx Select Setups screen.

Loading Factory Setups

You may selectively reload Factory Setups from the ExpressionMate’s ROM. To start, press the Global button when in Play mode to see this screen:

```
-GLOBAL SELECT-  
EDIT      UTILITY
```

Then press **Utility**, followed by **Select** to scroll through the list of the ExpressionMate’s Global Utilities. When **Load Setups** is displayed on the top line, press **Execute**.

A screen such as the following will be displayed:

```
-RELOAD SELECT-  
*Globl, SU 1-64
```

Notice that this screen is similar to that for SysEx Save. The selection procedure is the same for either operation. See “Saving Setups (SysEx Dumps)” on page 89 for details on using this screen to specify what you want to reload.

Loading User Setups

To load a Setup back into the ExpressionMate, simply play it from the storage device into the ExpressionMate. Make sure that the storage device's MIDI Out is connected to the ExpressionMate's Main MIDI In port. Also, check that the SysEx ID is set to the same value as when the data was originally saved (see "SYS EX ID" on page 82 for details on doing this). The ExpressionMate will see the SysEx and load it, and will flash an LED while it is loading.

Keep in mind that the ExpressionMate will reload your SysEx dumps as you saved them. It is not possible to load SU 13 into SU 2, nor is it possible to load a single User Scale or User Rhythm. Also, if the currently active Setup is reloaded from SysEx, it is necessary to temporarily select a different setup then return in order for the received setup to be copied into working memory.

Here are some tips on keeping things organized:

Try to save individual or small groups of Setups as high Setup Numbers, say from 50 to 60. This makes it a bit easier to just load those few setups and copy them to the lower numbers and then load another group. Breaking things up like this allows you greater flexibility if you want to reorganize later. Keep in mind also that dumping all your Setups ensures that you have everything you need and you can always break down your setups into smaller blocks at a later time.

Write down your Scales and Rhythms. All of the Globals objects are stored in one file. There is no way to load just one User Rhythm or Scale. If you want to mix Rhythms or Scales from separate dumps you will have to do it manually. It is also a good idea to note what user scales or rhythms are being used by a Setup. Say you load just the globals and then a group of Setups that use a different group of Global Rhythms, then all your arpeggiation will be looking at the right User Rhythm ID but that ID would be set to play the wrong Rhythm. It is a good idea to note what Setup is using what Rhythm, Scale or MMsg.

Once things are set the way you like, save the Setups along with the Globals at that point. Keep in mind that many of the ExpressionMate's user programmable items are Global Settings that are accessed by your Setups.

MIDIScope

MIDIScope displays MIDI data, either coming into the ExpressionMate or being produced by the instrument itself. To use it, press the **Global** button, then select MIDIScope from the Utilities list. Next select the source and message type as described below. Now whenever you play a key or controller or send any MIDI data to the ExpressionMate, the data shows up on the display. This can be a highly useful tool for diagnosing problems in a MIDI system, such as improper setting of controllers or dead cables. To leave MIDIScope, press the Exit button.

MIDIScope: Overview

MIDIScope is active only while "in" the MIDIScope utility. The current setup will continue to operate normally with MIDIScope active. However, processing overhead is increased somewhat so performance may suffer somewhat under heavy loading when the MIDIScope screen is active.

When you enter MIDIScope, there will be a Signal Select screen which allows you to select the MIDI stream to be displayed. Choices are:

- Main Output
- Aux Output
- Main Input
- Aux Input

Only one at a time can be chosen. Note that when an output is selected, only internally generated messages, including those passed by the MrgUnPro global parameter, will be seen. Messages passed by normal merging (MainMrgTo and AuxMrgTo) will NOT be seen. If you want to see those, select the appropriate input instead. ALL messages received by an input will be seen. Undesired ones, such as Clk, can be filtered out as described below.

Next a Message Select screen will be presented. The choices are:

- Notes
- Controllers
- System (Real-time & sys-common)
- SysEx

Any combination of these may be selected, though you may typically only select one.

After the second selection, the main MIDIScope screen is active. Except for SysEx, the bottom line will show a complete 1-3 byte message with timestamping. A SysEx message will always use both lines and for long messages will just show the first 10 bytes including the SOX byte.

While in MIDIScope, the left soft button will freeze the display and the right soft button will unfreeze the display. The Global button toggles between symbolic/decimal display and all hexadecimal display. The Exit button will exit the MIDIScope screen and back up one level to the Message Select screen. When re-entering MIDIScope, the last signal and message selections will be the initial defaults.

MIDI messages may come in faster than they can be displayed. If more than one additional message has been received, only the most recent message is displayed next.

MIDIScope: Detailed Operation & Screens

To activate MIDIScope, press the **Global** button from Setup Select or List Select mode.

The following screen is displayed:

```
-GLOBAL SELECT-
EDIT      UTILITY
```

Press the right soft button which brings up:

```
Load Setup
Select    Execute
```

Press the left soft button until the following screen is displayed:

```
MIDIScope
Select    Execute
```

then press the right soft button. The following screen is then displayed (Source will be either Main Out, Main Inp, Aux Out, or Aux Inp):

```
Source: Main Inp
Select    Execute
```

Press the left soft button to go through the 4 source choices. Press the right soft button to go to the next screen:

```
*NT *CC *SV *SX
Select    Execute
```

Here's what the abbreviations mean:

NT	Note messages
CC	Controller messages
SY	System messages
SX	SysEx messages

The left soft button will move a cursor to the 4 possible * positions in sequence. Use the + / - buttons or the spinknob to select (* shown) or unselect a message type. Any combination of message types may be selected.

Press the right soft button to continue to the MIDIScope screen.

The initial MIDIScope screen will appear as follows:

```
MIDIScope ACTIVE
Freeze  Unfreeze
```

This will persist until the first message is received. Thereafter messages (except SysEx) will be displayed as follows:

```
MIDIScope ACTIVE
1234 NO3 XXX XXX
```

The two character mnemonic identifies the message type and the digit identifies the channel. For channels 10-16, the ExpressionMate uses a special font capable of displaying 2 digits in one character space.

The message types are:

NF	Note Off
NO	Note On
PP	Poly Pressure
CC	Control Change
PC	Program Change
CP	Pressure
PB	Pitchbend

The "XXX" fields are data bytes and can be displayed in either hexadecimal (\$HH) or decimal (DDD). Pressing Global toggles the mode for SUBSEQUENT message display.

The "1234" field is the number of milliseconds elapsed between the previous message and this message. If more than 2.5 seconds elapse, the field will be "####".

System messages (Real Time and System Common) have no channel and will be represented with 3 character mnemonics as follows:

'MTC'	\$F1 MIDI TIME CODE
'SPP'	\$F2 SONG POSITION POINTER
'SSL'	\$F3 SONG SELECT
'\$F4'	\$F4 UNDEFINED
'\$F5'	\$F5 UNDEFINED
'TUN'	\$F6 TUNE REQUEST
'EOX'	\$F7 END OF EXCLUSIVE
'CLK'	\$F8 TIMING CLOCK
'\$F9'	\$F9 UNDEFINED
'SRT'	\$FA START
'CON'	\$FB CONTINUE
'STP'	\$FC STOP
'\$FD'	\$FD UNDEFINED
'SNS'	\$FE ACTIVE SENSING
'RES'	\$FF SYSTEM RESET

System exclusive messages will be displayed as follows:

```
SOX XX XX XX XX
  XX XX XX XX EOX
```

where "XX" is always the byte value in hex. Only the first 10 bytes, including SOX, will appear. If the message is shorter than 11 bytes, EOX will appear as the last byte. SysEx messages always use both display lines.

When the left soft button is pressed, the current display content is frozen for analysis and additional messages received are skipped. When the right soft button is pressed, the screen will continue to be displayed until the next message is received.

Press **Exit** to leave MIDIScope mode and return to the message type selection. It will take three Exits to return to Setup Select. Subsequent selection of MIDIScope will retain the last signal source and message type selections as defaults. Thus one tap on Global and 3 taps of the right soft button will return to active MIDIScope mode. On re-entry, the screen will always start off unfrozen.

Exiting a Global Editor or Utility

You can leave a Global Editor or Utility at any time by pressing the Exit button; then you can select another global object or press Exit again to return to Play mode.

Chapter 6

Messages, Troubleshooting, and Diagnostics

Warning and Error Messages

If you turn the power on and the ExpressionMate detects a problem, it may display one of these messages.

Low Battery

```
PLEASE REPLACE  
YOUR BATTERY!!
```

If the battery voltage is less than 2.5 volts at power-on, this screen will appear for 2 seconds before continuing. When the message comes up for the first time, the battery should last from 1 to 6 months before it stops working completely. A fresh battery should last 5-10 years.

Turn to page 105 for battery replacement steps.

Memory Failure

```
MEMORY FAILURE!!  
IGNORE      RELOAD
```

If this message appears, you have two choices:

- Press **Reload** to continue to the Restore Defaults screen and confirm. When you press **YES**, all Setups and parameters that you stored in memory will be reset to their factory defaults. This means that you will lose any Setups that weren't backed up, but the ExpressionMate should now work properly.
- Press **Ignore** to ignore the problem and try to use the possibly corrupted Setups. If the ExpressionMate behaves strangely, reload the Setups from either your backup copy via SysEx or from the ROM by pressing the **Global** button, then selecting **Utility**. Press **Select** until **Load Setups** is displayed on the top line, then press **Execute**. Press the right cursor

button (>) until the cursor runs off the right edge of the screen, then select **Yes** at the Reload prompt.

If the ExpressionMate freezes up, turn the power off and back on with the **Store** button held down. The following screen will be displayed:

```
RESTORE DEFAULTS
YES                NO
```

Press **Yes** at the Restore Defaults prompt to erase all memory and reset the ExpressionMate to its factory default settings.



Note: *It's possible to create bogus "Memory Failure" messages if you turn your ExpressionMate off too soon after the last Save, Rename, or Global edit. It could also happen if you experience a power failure while engaged in any of these activities. These kinds of memory failures may be safely ignored because the message really means that there was insufficient time for the ExpressionMate to recalculate its checksum (which takes about 2 seconds) before power was lost.*

Diagnostics

You can use the Diagnostic tests to make sure that the ExpressionMate's buttons, data knob, and MIDI ports are working properly. You can also use these tests to check controllers and MIDI cables.

Before You Begin

If you want to test controllers, such as the Ribbon, pedals, and breath controller, make sure that they're plugged in correctly. If you plan to do the MIDI test, you'll need two MIDI cables.

Entering Diagnostics

If the ExpressionMate is on, turn it off. Then press and hold the Controller and Global buttons and turn the power on. All of the front panel LEDs should flash twice; release the buttons after the second flash. (If the LEDs don't flash a second time, then turn the unit off and back on again, making sure to hold both buttons for several seconds.)

After the LEDs flash, you will see the Main Diagnostic Display:

```
E.M. DIAGS V1.00
CONTROLS CPU
```

The number in the upper-right corner is both the Operating System version and Diagnostics version. From this screen, you have three choices:

- Press **Exit** to quit Diagnostics and enter Play mode.
- Press **Controls** (<) to enter the User Controls Diagnostic.
- Press **CPU** (>) to bring up CPU Diagnostics, which let you access the MIDI test. (The other CPU tests are only for authorized Kurzweil Service Technicians.)

User Controls Diagnostic

The User Controls Diagnostic lets you test the buttons, Ribbon, and any other controllers that are plugged into the ExpressionMate.

While on the Main Diagnostic Display screen, press **Controls** (<), and you'll see this screen:

```
BATT=OK RIBBON
EXIT/GLOBAL=EXIT
```

If the battery voltage is less than 2.5 volts, the display will read "BATT=BAD." If this happens, read the battery replacement steps on page 105.

Start pressing the buttons or moving controllers that you want to test. The display should change to show which control you are using, as described on the next few pages.

You can exit the Diagnostic at any time by pressing the Exit and Global buttons simultaneously. This takes you back to the Main Diagnostic Display screen.

Buttons Test

When you press a button, the display changes to this:

```
BUTTON xx
XXXXXXXXXX
```

where xx is the button's number and yyyyyyyyy is the button's name. If the button is near an LED, that LED will light while you hold the button. Every time you press the Controller or Arpeggiator buttons, each of its three LEDs will light in a repeating cycle.

When you stop touching all buttons, the display should turn blank.

Spinknob Test

When you turn the Spinknob, the display should change to this:

```
SPINKNOB = x
```

where x is a number from 0 to 3. When you turn the knob clockwise, the numbers should increase like this: 0-1-2-3-0-1-2... When you turn the knob counter-clockwise, the numbers should decrease like this: 3-2-1-0-3... Turning the knob slowly should cause the numbers to change suddenly. If the numbers flicker when you do this, the spinknob may soon need replacement.

SP1/CC Test (CC Pedal or Switch Pedal)

Plug a switch pedal or a CC pedal into the SP1/CC Jack. (If the pedal is already plugged in, pull it out and plug it in again.) The display should change to this:

```
VARIABLE PEDAL  
PLUG INSERTED
```

If you plug in a properly-working CC pedal, moving it should show this:

```
VPDL = CC  xxx  
C
```

The xxx field is a number from 0 to 255, which shows the pedal's position from up (minimum or 0) to down (maximum or 255). The bottom line shows a "C" for CC pedal, then a bar that shows the pedal's position. The bar will show any roughness in the pedal's operation.

If you unplug the pedal, the display should show this:

```
VARIABLE PEDAL  
PLUG REMOVED
```

If you plug in a switch pedal, pressing on the pedal should produce the following display:

```
UPDL = SWITCH  
CLOSED
```

When you take your foot off of the pedal, the display should show this:

```
UPDL = SWITCH  
OPENED
```

**Note:**

Pedals made by Japanese manufacturers do the opposite – you'll see "CLOSED" when your foot is off of the pedal, and "OPEN" when you push down on the pedal.

SP2 Test (Switch Pedal Only)

Plug a switch pedal into the SP2 Jack. (If the pedal is already plugged in, pull it out and plug it in again.) The display should change to this:

```
SWITCH PEDAL  
PLUG INSERTED
```

When you press down on the pedal, the display should show this:

```
SWITCH PEDAL  
CLOSED
```

When you lift your foot off of the pedal, the display should show this:

```
SWITCH PEDAL  
OPENED
```

**Note:**

Pedals made by Japanese manufacturers do the opposite – you'll see "CLOSED" when your foot is off of the pedal, and "OPEN" when you push down on the pedal.

If you unplug the pedal, the display should show this:

```
SWITCH PEDAL  
PLUG REMOVED
```

The display may change while you plug in or remove a pedal; this is normal.

Breath Controller Test

Plug a breath controller (Yamaha or equivalent) into the Breath jack. The display should change to this:

```
BREATH CONTROL  
PLUG INSERTED
```

Blow into the breath controller, and the display should change to this:

```
BREATH = xxx  
B
```

The xxx field is a number from 0 to 255, which shows breath pressure from 0 (little or no pressure) to 255 (maximum pressure). The bottom line shows a “B” for breath controller, then a bar that shows the breath pressure. When the control is properly adjusted, xxx should be zero, and the bar should disappear when breath pressure returns to zero. The number and bar should also respond to low breath pressure.

If you unplug the breath controller, the display should show this:

```
BREATH CONTROL  
PLUG REMOVED
```

Ribbon Test

If possible, place the Ribbon so that as you face it, its cable comes out of the right end. Touching the Ribbon anywhere should produce a display like this:

```
R Lxxx Cxxx Rxxx  
R
```

On both lines, the leftmost “R” stands for Ribbon. The top line represents the Ribbon’s three-section mode. You can simultaneously touch any combination of sections, and the top line should show the correct values, as described below:

- Lxxx appears when you touch the left section (the section furthest from the Ribbon’s cable); xxx varies from 0 for the extreme left to 255 for the 1/3 point (the right end of the left section).
- Cxxx appears when you touch the center section; xxx varies from 255 at the 1/3 point down to zero at the 2/3 point (the right end of the center section).

- Rxxx appears when you touch the right section (the section closest to the Ribbon's cable); xxx varies from 0 at the 2/3 point back up to 255 at the extreme right.

If you touch the Ribbon in only one place, a bar appears on the bottom line to show single-section readings. If you're critically testing the Ribbon, carefully watch both lines of the display while slowly moving your finger from left to right. At the 1/3 point, the L and C fields should both turn on briefly. At the 2/3 point, then C and R fields should both turn on. The display shouldn't flicker, and the bar should smoothly move through these transition points without jumping forward or back.

MIDI Test

The MIDI test lets you check the ExpressionMate's MIDI ports. You can also use the test to check your MIDI cables. You need two MIDI cables to run this test.



Caution: *Do not connect the ExpressionMate's output to any kind of "intelligent" MIDI device, such as a synthesizer, merge box, patcher, or computer, while running this diagnostic! Doing so will crash the device and may corrupt its memory. However, simple thru boxes, passive mergers, and LED MIDI indicators should not experience any problems.*

To start the MIDI test, first enter Diagnostics as described on page 98. Next, press **CPU** (>), and press **SELECT** (<) repeatedly until the display says "MIDI TEST." Then press **RUN** (>).

The screen will change to this:

```
PLUG CABLE: MAIN  
OUT TO AUX IN.OK
```

Connect a MIDI cable from Main Out to Aux In, then press **OK** (>). The test will run for two seconds. If it passes, the screen will change to this:

```
PLUG CABLE: AUX  
OUT TO MAIN IN
```

Diagnostics

Connect a MIDI cable from Aux Out to Main In, then press >. The test will run for two seconds. If it passes, the screen will change to this:

```
ADD CABLE: MAIN  
THRU TO AUX IN
```

Leave the first cable in place. Connect a second cable from Main Thru to Aux In, and press >. The test will run for two seconds. If it passes, the bottom line will change to "PASSED. OK." Press **OK** (>) to return to the CPU Diagnostics display.

If any of the MIDI tests fails, the bottom display line changes to: "FAILED!! OK." You can press < to repeat the test, or press **OK** (>) to stop the test and return to the CPU Diagnostics Select screen. You can then press Exit to return to the Main Diagnostic Display screen, or press **RUN** (>) to start the MIDI test again.

Battery Replacement

The ExpressionMate uses a battery to back up the Setups in RAM when you turn the unit off. When it's time to replace it, the ExpressionMate will show you this screen on power-up:

```
PLEASE REPLACE  
YOUR BATTERY!!
```

If this happens, you should replace the battery as soon as possible.

Before You Begin

You will need the following things:

- A CR2032 battery (a 3-volt Lithium flat disc) which is available from Radio Shack and better drug stores
- A #2 Phillips screwdriver
- A table or other flat work area that measures about 30" wide by 10" deep



Note: *Opening the ExpressionMate to replace the battery will **not** void the warranty, as long as you don't replace or modify any of the other components inside of the ExpressionMate.*

Replacing the battery may erase the Setups that you've created, so back them up using a SysEx dump (see "Saving Setups (SysEx Dumps)" on page 89).

Opening the Unit

1. Turn the power off and unplug the power cord, the Ribbon, and all pedals and MIDI cables from ExpressionMate.



Warning: *Always unplug the ExpressionMate before you open it. Not doing so can cause personal injury and can damage the unit.*

2. If the ExpressionMate is on the mounting bracket, remove it by unscrewing the bracket's thumbscrew and lifting the ExpressionMate off.
3. Place the ExpressionMate on a table or other flat, stable surface.

Removing the Cover

4. See the figure below. Using a #2 Phillips screwdriver, remove the screws on the back of the ExpressionMate unit.

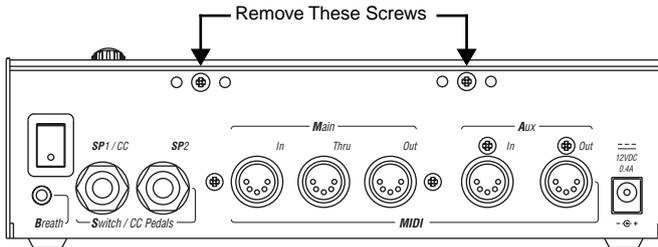


Figure 6-1. Removal of Rear-panel screws.

5. Slide the top cover forward about 1/4", then carefully tilt it back. The cables inside the unit are short, so you'll have to hold the cover up with one hand while you do the next few steps.

Replacing the Battery

6. See the figure below. Locate the battery holder, toward the back left side as you face the front of the unit.

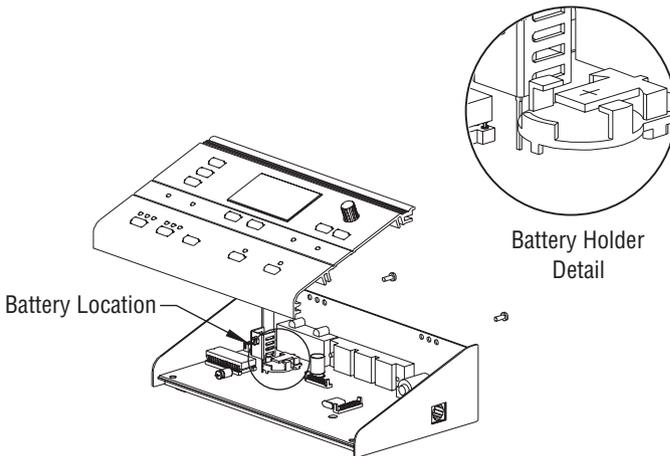


Figure 6-2. Battery replacement.

7. A small bracket holds the battery in place. To remove the battery, first lift up its front edge with your fingernail, or with a small flat-head screwdriver. Then use your fingers or the screwdriver to push the battery out of the bracket.



Warning: *Be very careful not to damage any circuit boards or other components inside of the ExpressionMate.*

8. Insert the new battery into the bracket, with the positive (+) side of the battery facing up.

Replacing the Cover

9. Notice that there is a groove along the front edge of the top cover. Replace the cover so that this groove fits over the front edge of the ExpressionMate chassis and the main circuit board. Then push the cover back so that it fits snugly in place.
10. Line up the holes on the Rear Panel of the unit with the screw holes in the ExpressionMate Top Cover. You'll notice that the Rear Panel has two groups of three screw holes . This is because the Top Cover is held in place by self-threading screws. After the Top Cover has been removed and replaced several times, the metal rails in the cover can become stripped. To avoid this, always follow these steps for replacing self-threading screws:
 - Put the screw on your screwdriver.
 - Line up the screw in the hole.
 - Slowly turn the screw counter-clockwise until you feel a slight click.
 - Tighten the screw.

If a rail becomes stripped, use any one of the three holes of each group. If the rail is *not* stripped, put each screw in the center hole.

Powering Up

11. When you have finished, plug the ExpressionMate in and turn the power on. The startup screen should display, then the main Play mode screen should appear. If the "Please Replace Your Battery!" message still appears, review the battery replacement steps to see if you missed something.

12. If you see a “Memory Failure” message, select “Reload.” Then choose **Yes**. If you backed up your setups on a sequencer, play them back into the Main In port after you achieve normal operation with the factory defaults.

For more information on memory failures, see “Memory Failure” on page 97.

Appendix A

Sending MIDI Messages

This powerful (and potentially dangerous) feature allows the ExpressionMate to send any kind of MIDI message in response to a control change, button press, setup change, etc. Even manufacturer specific SysEx messages with strangely coded data values embedded are possible, as long as they are 16 bytes or fewer in length.

The basic idea is that 6 of the special destinations (#56-62) are assigned to the 6 possible MIDI Strings. Thus if a controller (of any type) is moved and it was assigned to a String destination in one or more of its zones, the string message would get sent. Ditto for Entry and Exit values, if present, even MIDI remap controllers. Fields in the string may be constants or variables like the control value, the channel number associated with the zone, and others as defined below. The 6 messages themselves are Global parameters, edited by a special global editor. They thus form a small “pool” of available MIDI String formats from which setups may choose.

The string can be up to 16 bytes long including SOX and EOX. Actually it doesn't have to be SysEx; it could be any string or even multiple MIDI messages (withOUT running status); as long as the total length is 16 bytes or less.

The editor allows each byte value in the string to be set to a numeric value (0-127, \$00-\$7F) or a 3-character mnemonic which can represent a status byte or a variable. Following is a list of the mnemonics:

Sending MIDI Messages

```
'NF-'   $8x  NOTE-OFF <Key #> <Velocity>
'NO-'   $9x  NOTE-ON  <Key #> <Velocity>
'PP-'   $Ax  POLY PRESSURE <Key #> <Pressure value>
'CC-'   $Bx  CONTROL CHANGE <Control #> <Value>
'PC-'   $Cx  PROGRAM CHANGE <Program #>
'CP-'   $Dx  CHANNEL PRESSURE <Pressure value>
'PB-'   $E0  PITCHBEND <LSB Value> <MSB Value>  14 BIT C-VAL
'V7.'   $E1  MOST SIG 7 BITS                      XXXXXXXX-----
'V.7.'  $E2  LEAST SIG 7 BITS                      -----XXXXXXX
'V4.'   $E3  LEFT 4 OF MOST SIG 8 BITS             XXXX-----
'V.4.'  $E4  RIGHT 4 OF MOST SIG 8 BITS           ----XXXX-----
'V1.'   $E5  LEFT 1 OF MOST SIG 8 BITS            X-----
'V.1.'  $E6  RIGHT 1 OF MOST SIG 8 BITS           -----X-----
'V8.'   $E7  LEFT 7 OF MOST SIG 8 BITS            XXXXXXXX-----
'V.8.'  $E8  RIGHT 7 OF MOST SIG 8 BITS           -XXXXXXX-----
'ZCH'   $E9  CHANNEL OF THIS ZONE, 0-15
'SU#'   $EA  THIS SETUP NUMBER
'ZON'   $EB  THIS ZONE
'KRZ'   $EC  KURZWEIL ID ($07)
'NUL'   $ED  NOT USED (NOTHING IS SENT)
'NUL'   $EE  NOT USED (NOTHING IS SENT)
'END'   $EF  END OF STRING
'SOX'   $F0  START OF EXCLUSIVE <variable number of data bytes> EOX
'MTC'   $F1  MIDI TIME CODE <data>
'SPP'   $F2  SONG POSITION POINTER <LSB position> <MSB position>
'SSL'   $F3  SONG SELECT <Song Number>
'$F4'   $F4  UNDEFINED
'$F5'   $F5  UNDEFINED
'TUN'   $F6  TUNE REQUEST
'EOX'   $F7  END OF EXCLUSIVE
'CLK'   $F8  TIMING CLOCK
'$F9'   $F9  UNDEFINED
'SRT'   $FA  START
'CON'   $FB  CONTINUE
'STP'   $FC  STOP
'$FD'   $FD  UNDEFINED
'SNS'   $FE  ACTIVE SENSING
'RES'   $FF  SYSTEM RESET
```

For the MIDI “Channel Voice” status bytes (those with mnemonics in the form of “XX-” above), if the right nybble (channel field) is zero (displayed as “-”), then the channel number of the Zone sending the string will be substituted. If the right nybble is 1-F (hex, equivalent to channels 1-15), then it is sent literally, regardless of the zone's channel. Note that Pitchbend does not have this feature; the zone's channel is always used.

Special Function Bytes

The MIDI special function “system” messages (those with a hex value from \$F0 to \$FF) are briefly explained below. For more detail refer to the MIDI spec.

SOX (\$F0) and EOX (\$F7) identify a System Exclusive message. The number and format of the data bytes between the SOX and EOX bytes is completely device dependent and varies with manufacturer and model. Typically the first data byte (or 3 bytes for those who got into the game late) identifies the manufacturer. Subsequent bytes identify the model and usually a device ID.

To find out about the SysEx format for a specific device, check the “SysEx Implementation” information in its manual.

MTC (\$F1) is used to endow MIDI with a SMPTE-like absolute time code capability. It is always followed by one 7-bit data byte which is further broken down into bit fields. See the MIDI Time Code spec for details. It is unlikely that MIDI time code would ever need to be sent by the ExpressionMate

Song Position Pointer (\$F2) is used to instruct a sequencer to fast-forward (or rewind) to a specific place in a performance. The two data bytes identify the position. See the MIDI spec for details on their format.

Song Select (\$F3) is used to instruct a sequencer to find and load a specific song. The single data byte identifies the song by number.

Tune Request (\$F6) is used to instruct analog synthesizers to retune or recalibrate themselves and is thus largely obsolete now.

Timing Clock (or simply just “clock”) is used to keep sequencers and arpeggiators in sync. The MIDI standard calls for this byte to be sent at 24 times the selected tempo. Thus for a 120BPM tempo, the transmission rate would be 48 times per second. It’s unlikely that sending single Clock messages using the MIDI strings feature would be useful.

Start, Continue, and Stop are sequencer and arpeggiator controls which perform the functions implied by their names.

Active Sensing (\$FE) is used by some Japanese synthesizers to signal “I’m alive” to anything connected to their outputs. Its intended use is to allow detection of an unconnected cable and

thus automatically reset a receiver's MIDI decoding logic, cancel stuck notes, etc. The MIDI spec has details about this but its generally an unused feature (no Kurzweil gear uses it).

System Reset (\$FF) was originally intended to reset everything in a MIDI chain to its "power up" status. Most modern instruments don't respond to it and the MIDI spec advises against its transmission. Available if useful and needed however.

Data Format Codes

The coded data format mnemonics ("V7." - "V8.") are used to express how a control's value is to be formatted. The internal control value is always 14 bits (Switch and MIDI values always have zeroes for the least significant 7 bits). The patterns of X (coded in this MIDI byte and sent) and - (not sent) illustrate how each code selects bits to be sent. By using one or more of these together, most any commonly used method to format controller data into SysEx messages may be specified. Note that "V7." and "V8." send the same data; the latter was included for symmetry.

Experimentation in specific cases is also a valid way of understanding. MIDIScope can also be useful for checking the resulting message bytes.

Using the MIDI String Editor

To get to the editor, press the Global button then the Left cursor to enter the Global editor select page. Press the left cursor until the display reads

```
EDIT MIDI Msgs
Select      EDIT
```

Press the right cursor to enter the editor. When you first enter the editor the ExpressionMate prompts

```
Edit MIDI Messag
(GLOBAL=HEX/DEC)
```

This is to remind you the ExpressionMate can show the message you are writing in Hexadecimal or Decimal numbers. In Decimal the ExpressionMate will also show abbreviated names for certain messages. Press the Global button to toggle between the two views

The MIDI string editor presents a screen like this:

```
STRING X BYTE YY  
AAA BBB CCC DDD
```

X is the MIDI string number 1-6

YY is the byte number the cursor is on

AAA, BBB, ... are the byte values in decimal, \$XX hex, or 3-char mnemonic.

The Left and Right soft buttons will move the cursor and thus scroll the bottom line and alter the YY display. A left/right double-press will cycle through the strings. The +/- buttons, spinknob, and Learn button will change the byte value. A +/- double-press will jump the value in large steps. The Global button will toggle between decimal and hex display. The special mnemonics will follow 127 (\$7F) in the numbering sequence.

To exit, press Exit.

Initially the strings are filled with "END" mnemonics. If the string is shorter than 16 bytes, it must be terminated with an "END" byte (which is not sent). If the first byte is "END", then nothing is sent. Strings may be padded if desired with "NUL" bytes anywhere; the "NUL" bytes are not sent.

The editor DOES NOT enforce the coding of valid MIDI messages! Sending an invalid message can confuse or even crash the ExpressionMate and/or external equipment. Therefore, do not use the Strings feature unless thoroughly familiar with valid MIDI message construction. PLEASE NOTE: Running status is NOT permitted in a MIDI String.

Editing of the strings is "live" therefore if a controller is already set to send to a String destination and the controller moves, a partially constructed, (and thus perhaps invalid) string can get sent. Thus it is a good idea to construct the needed strings first then assign controllers to them.

Appendix B

ExpressionMate ROM Setups

The ExpressionMate's Setups are made for use with:

- a Controller that sends on MIDI channel 1 *and*
- a GM sound source.

Be sure to turn Local Control Off to avoid doubling notes if you're set up in a MIDI loop (e.g., you're using a MIDI keyboard as controller AND sound source). Also, make sure you're in Multi-timbral mode on your sound source (usually the default mode on modern synthesizers).

Some of the Factory Setups call up specific GM programs by sending Program Change messages. Since GM does not support the bank controller, no Bank Select messages are sent.

If your sound source is not GM compatible, then you will probably want to disable receiving Program Changes on channels 1-3 on that device, while you experiment with the Factory Setups. If your sound source is not capable of doing this, or if you need it to respond to Program Changes for other reasons, you can edit the Fix 1 Destination and change it to None, or you can edit the Fix 1 Entry Value to any specific Program Change number that you want. If you want to approximate the GM Program Changes sent by the Setups, a standard GM program list will make a handy reference.

Editing Program Change Messages

Not all Setups send Program Change messages. Many do, however, so it's helpful to be able to view and edit the Program Changes your ExpressionMate sends. Here's the step-by-step procedure:

1. Start from any Setup. Here we'll use SU 3 "Big Strum".
2. Press the Controller button.
3. Double press the left and right cursor buttons (beneath the screen) until the FIX1 parameter is displayed. The screen will look like this:

```
SU 3    91:38 Z1
FIX1 Dest:PrgChg
```

Notice that FIX1 is sending a Program Change message (PrgChg).

4. Press the right cursor button (>) to move to the FIX1 Entry Value screen. Notice that the value is 24, indicating that program change 24 is being sent. In the General MIDI program set, this is Nylon String Guitar. You can change the value here by entering the number for a different program – another guitar patch if you like – or any other program of your choosing. You can change the value with the data knob or the -/+ buttons.
5. Now press the Controller button again. If you check the upper right-hand corner of the screen, you'll see that you're now looking at Zone 2, abbreviated here as "Z2".

```
SU 3    92:46 Z2
FIX1 Entr:46
```

The Program Change sent on this zone is 46, which is GM's plucked harp. Again, you can edit the Program Change message here, if that's what you'd like to do.

6. Press the Controller button one more time to have a look at Zone 3, and change its program if you want.
7. Press the Exit button when you're satisfied with the programs. If you've changed any of the values, you'll see an asterisk (*), which indicates that changes have been made from the default settings. Press Exit again, and you'll have the opportunity to save this Setup with a new name and/or location number. The naming and saving dialogs are described on page 57.

Programming Conventions for Setups

Most Setups follow the conventions shown in the chart below.

Controller	Function
RBN1	<i>Variable</i>
RBN2	<i>Variable</i>
RBN3	Arpeggiator Tempo
Breath	Breath
CCPD	Foot
SP1	Sustain
SP2	Latch
SW1	Latch
SW2	Arpeggiator On
Fix1	Program change
Fix2	Pan
Fix3	All notes off
Map1	Sustain to Latch
Map2	Pitch Bend to Pitch Bend
Map3	Modulation to Modulation.

Setup Descriptions

1. **ABS Bend** - The ribbon sends pitch bend in absolute mode with a spring set to return the pitch to the center.
2. **REL Bend** - MAP3 remaps modulation messages to arpeggiated notes' duration.
3. **Big Strum** - What you play on your controller ends up as a scale on the ribbon. Play a chord then run your finger along the ribbon to ascend up the notes you played.
4. **ABS no Sprg** - Map2 reverses pitchbend, up is now down. Map3 sends arp note duration.
5. **GM.Pb/Pan/Xp** - Section 1 sends pitch bend. Section 2 sends MIDI pan, and Section 3 sends expression. Map3 sends arp note duration.
6. **GM.KeysRemap** - The ExpressionMate is using its note mapping features to play a different sound every three keys. Each ribbon section controls volume for each sound.
7. **GM.VelRemap** - The velocity you play will determine what sound or blend you hear. Ribbon section 1 controls pitch bend, section 2 sends modulation, section 3 controls the Arpeggiator tempo. SW1 changes the Shift Limit of the Arpeggiator.
8. **Bass&Cym/Org** - Section 1 sends modulation to the organ and section 2 controls the organ volume. Section 3 controls the Arp tempo (cymbal). The CCPD also controls the organ volume. SP1 sends modulation to the organ. Map 2 sends pitch bend to the bass sound. Map3 controls modulation on the organ.
9. **SheSellShell** - Playing hard adds a low octave piano. Section 1 starts the waves and section 2 controls the waves' speed. Press SW1 to stop the waves. Press SW2 to start Zone 2 arpeggiating. Section 3 controls the Arpeggiator's note velocity for the low piano.

-
10. **GM.Tap&Slide** - Play Section 1 to start arpeggiation, if you slide your finger after playing a note it adds modulation. Section 2 plays notes as well. Section 3 plays a lead sound and sliding your finger adds pitch bend. Pitch bend is remapped to control volume on the sound in section 3. Modulation is remapped to Arp note duration.
 11. **Harp Gliss** - Section 1 strums the harp (play keyboard first). Section 2 controls pan. Section 3 controls Arp tempo. SW1 changes the harmony when the arpeggiator is on.
 12. **GM.3SndXfade** - Section 1 crossfades the sounds. Section 2 controls Arp note duration
 13. **GM.NtMap-of2** - Section 1 controls pan, Section 2 controls Arp note duration. Map1 remaps zone 1 to sustain and zone 2 and 3 to latch. Map2 remaps pitch bend to zone 1. Map 3 remaps to pan.
 14. **ChickenFrippin** - Section 1 controls Arp note duration, Section 2 controls Modulation, Section 3 controls Tempo. Map3 remaps zone 1 to volume and zone 2 and 3 to Arp shift limit.
 15. **SloHeldArp** - Section 1 controls flute's Volume, Section 2 controls Arp note duration, Section 3 controls tempo.
 16. **3.2.3 Rhythm** - Section 1 plays notes, Section 2 controls Arp note duration, Section 3 controls tempo. SW2 sends Arp shift amount.
 17. **Cascade 1** - Section 1 send zone 1 Arp note duration, Section 2 sends zone 2 Arp note duration, Section 3 sends tempo, CC send expression, Map 1 sends sustain.
 18. **RBN/Arp/Solo** - Section 1 plays notes in Arp pattern. Section 2 changes zone1 Arp shift amount. Section 3 controls left hand split Arp velocity. Map 1 sustains zone 1.
 19. **Cascd.3xSplT** - Section 1 is Arp note duration. Section 2 is pitch bend on harp.

20. **Toggle Split** - Section 1 plays notes in zone 3, Section 2 controls Arp note duration in zone 3. Section 3 controls tempo. Map2 sends expression to Zone 3, Map 3 crossfades pan for zone 1 and 2.
21. **CCNotRhyTogl** - Notes played are toggled into the Arpeggiator using notes played from ribbon section 1. Section 2 changes the Arp shift amount and section 3 changes Arp shift limit. Press SW1 to stop arpeggiation.
22. **PlayHold/SW1** - Play notes and hold them and press SW1.
23. **C2Drms 3/4B** - Play C2 to start Arp pattern. Play with Sw and Pedals. They turn on and off part of the pattern. Play notes on Section 2; control Arpeggiator speed on Section 3.
24. **BoomBeBoomBe** - Drums everywhere. Sounds on all ribbon section, SW and SP controllers. The Arp plays different patterns across the key splits. Map3 controls the note switch to enable notes to be played from the CCPD.
25. **MIDI Volume** - Sends volume on one channel up the ribbon.
26. **XG Snd Cntrl** - Sends channel-based sound modifications to XG sound modules. RBN1 sends controller #71 which is frequency cutoff and centers at 64, lower values being darker and higher values being brighter. RBN2 sends controller #74 which controls resonance. RBN3 sends controller #72 which adjusts the release time. The CCPD sends controller #73 which adjusts the attack time. Breath sends controller #2 Breath; SP1 sends controller #68 soft pedal; SP2 sends controller #66 Sostenuato.
27. **XG Efx Cntrl** - Sends controller information to effects on XG sound modules (similar to XG Snd Cntrl, above). RBN1 sends controller #91 which is effect send 1, RBN2 sends #93 effect send 2, and RBN3 sends #94 effect send 3, the CCPD sends controller #16 which adjusts the assignable effect controller when the Variation is in INS (often controls the Wet/Dry amount or something like distortion level.)
-

28. **Seq Cntrl** - Section 1 sends volume, 2 pan, 3 tempo. SW1 on sends Seq. start, press again sends seq. stop. SW2 sends seq. continue press again sends seq. stop.

29. **KDFX Cntrl** - Ribbon sections send MMsg for KDFX users. SW sends note on C4 for live mode.

30. **K25 Bends** - The ribbon sends all three K2500 pitch bend controllers: section 1 pitch bend, section 2 aux bend 1, sect 3 aux bend 2.

31. **Data+/D-/Not** - Section 1 sends data -, sect 2 sends data +, sect 3 sends chromatic scale. SW also send data+ and data -.

32, 64. **BLANK** - No parameters are set to any values.

33–63. **FACT DEFAULT** - These Setups are good starting points for your own Setups. Parameters are set to reasonable values.

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