INTRODUCTION TO THE

KURZWEIL™

Music Systems

Mark 5

Ensemble Grand

OWNER'S MANUAL

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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 into an outlet on a circuit different from 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 present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la class B prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

About The Mark 5 Ensemble Grand

Introduction

Welcome to the world of the Kurzweil Mark 5 Ensemble Grand!

The Mark 5 Ensemble Grand gives you simple, affordable access to Kurzweil's high-quality sound technology. Authentic digital representations of musical instrument sounds are the starting point. The Mark 5 Ensemble Grand reproduces the finest details of the original sounds; you'll even hear differences in tone as you play from bass to treble and from soft to loud—just as in the originals.

The instrument is also *multitimbral*, meaning that you can play different sounds at the same time. This allows you to use it in conjunction with your home computer or a MIDI sequencer to create your own tapeless multitrack recordings. (MIDI and sequencers are explained later in this manual.)

About This Manual

This manual serves as both a guided tour of the Mark 5 for the new owner and a reference for later use. The different features of the instrument are discussed one at a time in a logical order.

Throughout the manual you will find two special kinds of "sidebars"—sections that supplement the main explanation of the features:

TRY IT 

The "Try It" sidebar gives you an opportunity to try a particular feature for yourself, so that you can better understand how it works.

The "MIDI" sidebar explains the aspects of a feature that have to do with MIDI. These aspects are for advanced users. These details become important when you connect the Mark 5 to other MIDI equipment.

The manual is divided into four main sections:

- ABOUT THE MARK 5 ENSEMBLE GRAND. This section explains the features of the instrument.
- PLAYING THE MARK 5 ENSEMBLE GRAND. This section concentrates on how to play the sounds of the instrument realistically.
- MUSIC. The songs in this section demonstrate many of the features and playing techniques discussed in the first two sections.
- MIDI. This section provides a general overview of MIDI—what it is, what it does—and concludes with the MIDI Implementation Chart for the Mark 5.

Setting Up The Instrument

See the "Important Safety And Installation Instructions," on the inside front cover of this manual, for information regarding installing the Mark 5 Ensemble Grand.

For the best sound, you should position the instrument 6 to 8 inches from a wall, and 2 feet or more from a corner. If this is not possible, you can use the Treble and Bass controls to compensate for the location and restore tonal balance to the sound. (These controls are discussed on page 13.)

NOTE: Make sure nothing obstructs the tweeters (the speakers on the top of the instrument). Don't cover them with anything.

Sliding Key Cover And Music Rack

The sliding key cover helps to keep dust and dirt off of the keyboard and the front panel when the instrument is not in use. Use two hands to open and close it.

The music rack consists of two parts: the back plate (the part that the music leans up against) and the base. The base, which rests on the top of the cabinet of the Mark 5 Ensemble Grand, has a large slot that runs its entire length. Fit the back plate firmly into this slot with both hands.

Don't put too much weight on the music rack.

Care Of Your Instrument

To dust the Mark 5 Ensemble Grand, use a soft dry cloth. DO NOT use aerosol sprays on or near the instrument.

If the keys should need cleaning, a soft damp (NOT wet) cloth will usually suffice. If necessary, dampen the cloth in a solution of dish soap and water. NEVER use solvents such as alcohol or benzene.

Power

The Mark 5 Ensemble Grand operates on AC power, and has been manufactured specifically for the main supply voltages used in your area. A power cord is included with the instrument to connect it to an AC outlet. If you should move to another country, or if you should have any doubts about voltages, see your local Kurzweil dealer.

Before connecting the power cord, make sure the Power switch, located to the right of the keyboard, is OFF.

The power cord is made so that one end of it plugs into the power socket on the back of the Mark 5 Ensemble Grand, and the other end plugs into an AC outlet. Connect the cord to the instrument first, then the AC outlet.

NOTE: To avoid possible injury or electrocution, do not remove any screws or panels. There are no user-serviceable parts inside the Mark 5 Ensemble Grand.

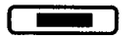
Once the power cord is connected, you can turn the Power switch ON. (NOTE: Make sure you do not step on any of the pedals when you power-up the Mark 5; if you do, that pedal will operate in reverse. To correct this, turn the instrument off, then back on.)

The instrument is now ready to play.

NOTE: The first time the Mark 5 is turned on, it should be left on for one hour, to charge the internal battery.

To make sure that you can hear the instrument, move the Master Volume slider (on the left end of the front-panel controls) to the middle of its range. This should provide a reasonably comfortable level of volume, which you can adjust if you wish the sound to be louder or softer.

Demo

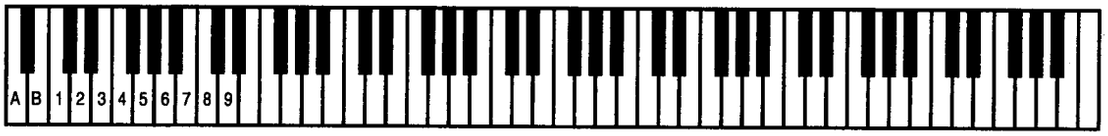


Demo

The Mark 5 Ensemble Grand contains a number of built-in demonstrations to acquaint you with the sounds and capabilities it possesses.

To access these demonstrations, press the Demo button, which is located at the right end of the front-panel controls. The button lights up to show that you are in the demonstration mode. You can now access the demonstrations as follows:

- To hear a performance demonstration of the Mark 5, press one of the keys on the keyboard that are numbered in the following illustration:



  Each key plays a different demo song.

- To hear a demo of an individual sound whose name is listed above a Sound Select buttton, press the button in the Sound Select section of the panel that is labeled with the sound you wish to hear. A short tune that fits that sound will play. Press the Variation button to hear a demo of the sound whose name is listed under the Sound Select button.
- To hear a demo of a split sound—one in which a bass sound plays in the left portion of the keyboard—press the button in the Left Splits section of the panel that is labeled with the bass sound you wish to hear. A short tune that fits that sound will play.
- To play all of the performance demo songs one after another continuously, press the lowest (leftmost) white key on the keyboard (Low A).
- To play all of the demos of individual sounds one after another continuously, press the second-lowest white key on the keyboard (Low B).

Pressing another sound select button or demo key while a demo is playing starts the new demo immediately.

To exit the demonstration mode, press the Demo button again.

TRY IT

- Press the Demo button to enter the demonstration mode.
- Press one of the Sound Select buttons to hear a demo for that sound.
- Press one of the demonstration keys to hear a performance demonstration of the instrument.
- Press the Demo button again to exit the demonstration mode.

The Keyboard And Pedals

The keyboard of the Mark 5 Ensemble Grand consists of 88 weighted keys, with an action designed to simulate the feel of an acoustic piano. Just as with an acoustic piano, the harder you press the keys of the Mark 5 Ensemble Grand (more precisely, the faster you strike them), the louder and brighter the resulting sound is. In technical terms, this is called "velocity sensitivity." It makes the Mark 5 Ensemble Grand a truly expressive instrument. See page 16 for information on adjusting the velocity sensitivity to suit your preference. (NOTE: Some sounds, such as the Pipe Organ sounds, purposely *aren't* velocity-sensitive, in order to be more realistic; real pipe organs aren't velocity-sensitive. For more information on what sounds are and aren't velocity-sensitive, see page 8.)

When you turn the Power switch ON, the Grand Piano sound is automatically active and ready to play.

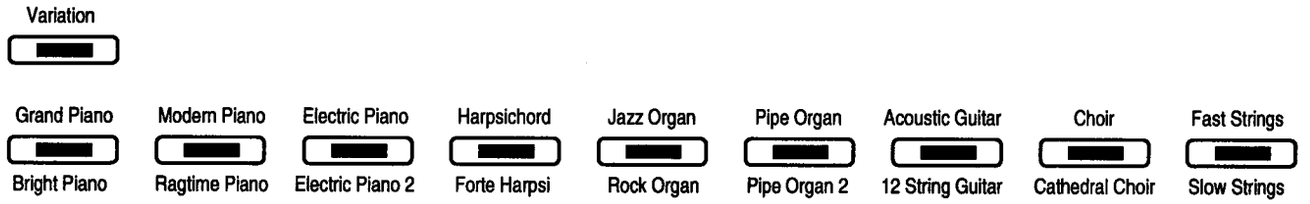
In addition to the expressiveness offered by the keyboard, there are three pedals that provide you with further control over the sounds of the Mark 5 Ensemble Grand. These pedals generally have the same functions as those on a grand piano. Those functions are as follows, from right to left:

- SUSTAIN. Pressing this pedal causes notes to sustain even when you lift your fingers from the keys.
- SOSTENUTO. Keys that are already held down at the time this pedal is pressed will sustain, while any keys played once the pedal is down will not sustain.
- SOFT. Notes played while this pedal is down will sound softer and more muted than those played when the pedal is up.

  NOTE: The left pedal has different functions for some sounds. For example, with the Jazz Organ sound, the left pedal controls a rotating-speaker effect. For more information on these functions, see page 8.

Sound Select

The Sound Select portion of the front panel contains buttons used for selecting the individual sounds available on the Mark 5 Ensemble Grand. You select a sound by pressing the corresponding button; the light in the button illuminates to show you which sound is selected.



Selecting a sound also causes the Mark 5 Ensemble Grand to transmit a MIDI program change message, unless transmission of program change messages has been disabled in MIDI Edit Mode. (For more about MIDI, see pages 43–48. For information about MIDI Edit Mode, see pages 16–19.)

VARIATION

Each sound button actually can select two different sounds. Normally, each button selects the sound that is labeled *above* the button. To access the sound labeled *below* the button, press Variation; the light in the Variation button will illuminate, indicating that now the sound labeled below the active sound button is selected.

Pressing Variation again will select the original sound.

Each of the nine sound select buttons "remembers" whether or not Variation was ON the last time that sound was selected; so if you select the variation for a particular sound, then select a different sound, then return to the first sound, the variation will automatically be selected again. (This variation memory is reset when the power to the Mark 5 Ensemble Grand is turned on.)

Variation sounds have their own MIDI program change numbers, which differ from the program change numbers of the basic sounds. (See page 46 for more information.)

The following page lists the preset sounds and their variations, and discusses details of their makeup and performance characteristics.

List Of Preset Sounds And Their Variations

SOUND	Comments	VARIATION	Comments
Grand Piano	The sound is stereo panned across the keyboard—low notes sound from the left, high notes from the right.	Bright Piano	A brighter sound than the Grand Piano. The sound is stereo panned across the keyboard—low notes sound from the left, high notes from the right.
Modern Piano	This is an "electric grand" sound, composed of two layers (piano and the hard strike of the Electric Piano), slightly chorused.	Ragtime Piano	This "honky tonk" sound is composed of two layers of piano, detuned from one another. The sound is stereo panned across the keyboard—low notes sound from the left, high notes from the right.
Electric Piano	This classic "tine electric piano" sound is composed of two layers (a tine sound and an overdriven sound), crossfaded by velocity.	Electric Piano 2	In this sound, two layers are *switched* by velocity; soft strikes produce a tine sound, hard stikes produce an overdriven sound. Stereo tremolo and chorus are built in.
Harpsichord	In this sound, two layers play in octaves. Pressing the left pedal defeats one layer. The sound is not velocity-sensitive.	Forte Harpsi	This reproduces a harpsichord sound used for forte (loud) passages. Two layers sound in different octaves. Pressing the left pedal defeats one layer. The sound is not velocity-sensitive.
Jazz Organ	This is the sound of a drawbar organ with a percussion attack. A light rotating speaker effect is built in; pressing the left pedal increases the speed and depth of the effect. The sound is not velocity-sensitive.	Rock Organ	This sound features full drawbars, with no percussion. A light rotating speaker effect is built in; pressing the left pedal increases the speed and depth of the effect. The sound is not velocity-sensitive.
Pipe Organ	In this sound you hear a cathedral organ with all stops drawn. The left pedal causes a gradual decrescendo when pressed, and a crescendo when released. The sound is not velocity-sensitive.	Pipe Organ 2	This is a soft, "hollow" pipe organ sound. The left pedal causes a gradual decrescendo when pressed, and a crescendo when released. The sound is not velocity-sensitive.
Acoustic Guitar	This sound duplicates a six-string acoustic guitar.	12 String Guitar	Two layers duplicate the sound of a twelve-string guitar: they are tuned in octaves on the lower part of the keyboard, and in unison on the upper part.
Choir	Faster velocities cause slightly faster attacks, as well as louder notes. The left pedal causes a gradual decrescendo when pressed, and a crescendo when released, as well as slightly affecting the timbre of the sound.	Cathedral Choir	This sound blends two layers of choir to produce motion as a note unfolds. The sound features slow attack and release times. Faster velocities cause faster attacks, as well as louder notes.
Fast Strings	Strings with a fast attack are stereo panned across the keyboard in reverse—basses and cellos sound from the right, violas from the middle, and violins from the left—as though you're in the audience. Pressing the left pedal slightly affects the timbre of the sound.	Slow Strings	This sound blends two layers of strings to produce motion as a note unfolds. The sound features slow attack and release times, although faster velocities cause faster bowed attacks, as well as louder notes.

For information on playing these sounds, see pages 23–27.

Try It

- Press the Fast Strings button. Play a few notes on the keyboard.
- Press the Variation button. Notice that the button illuminates. Play a few notes again to hear the Slow Strings sound.
- Press the Jazz Organ button. Notice that the Variation button is no longer illuminated. Play a few notes.
- Press the Fast Strings button again. Notice that the Variation button re-illuminates . Play a few notes to hear the Slow Strings sound.

LAYERING SOUNDS

For even more variety and richness of sound, you can *layer* two sounds across the keyboard—that is, each key of the keyboard will play two sounds at the same time. The result is similar to having two different sections of an orchestra play the same notes.

To select the two sounds that you wish to layer, press and hold one sound select button and then press another. The buttons for both sounds will illuminate. If a sound variation was remembered for either of the sounds, it will be used in the layer. If the variation was enabled for the first sound selected, the Variation button will be lit.

Creating a layer transmits a program change message for only the first sound selected; the number of the second sound is transmitted as the value for MIDI controller #82. (For more information about this, see page 19.)

Adjusting The Balance In A Layer

You can adjust the balance between the two sounds in a layer, by making the second sound softer. To do this, press and hold the button for the first sound, and press the button for the second sound repeatedly; each press of the second button will lower the volume of that sound by a small amount.

For example, if you layer Grand Piano and Jazz Organ (in that order), you can make the organ softer in relation to the piano. If you wish the organ to be *louder* in relation to the piano, then select the organ first, and lower the volume of the piano.

Adjusting the volume of the second sound in a layer this way transmits a MIDI controller #79 message.

Strings And Choir

Two favorite sounds for use in layered combinations are strings and choir. In combinations like piano and strings, guitar and strings, and organ and choir, the strings or choir provide what's known as a "pad" sound—a soft cushion on which the music rests.

Because these two sounds are so important in this context, Kurzweil engineers have designed specially optimized versions of them for use in layered combinations. Say, for example, that you layer piano and strings, by pressing and holding the Grand Piano button and pressing the Fast Strings button. The string sound you'll hear will be neither the Fast Strings nor the Slow Strings (so it doesn't matter whether the Variation button was ON or OFF for the strings), but a third, "hidden" strings sound tailored just for layering. You can think of it as the "and Strings" sound, as in "Piano and Strings," "Harpsichord and Strings," etc. There is also a similar "and Choir" sound.

These special sounds have been adjusted so that the attacks are neither too fast nor too slow, and so that they fade out realistically as you approach the top of the keyboard, so that high notes are not strident.

If you wish to use the "original" Fast Strings, Slow Strings, Choir, or Cathedral Choir in a layered combination, you can do so by pressing and holding that button *first*, then pressing the button for whatever other sound you wish to layer with it.

TRY IT

- Press and hold the Fast Strings button. Make sure the Variation button is not illuminated.
- While holding the Fast Strings button, press the Grand Piano button twice. This layers the Fast Strings with the Grand Piano and lowers its volume slightly.
- Release the Fast Strings button and play some notes or chords to hear both sounds. Note the fast attack of the strings sound.
- Now press and hold the Grand Piano button and press the Fast Strings button.
- Release the Grand Piano button and play up and down the keyboard. Notice the soft attack of the strings, and how they fade out toward the top of the keyboard.

Grand Piano And Bright Piano

The Grand Piano and Bright Piano are tuned differently than other sounds on the Mark 5; they use what is known as "stretch tuning." In this tuning, which is employed on acoustic pianos, octaves are slightly wider than theoretically pure, so that the notes on the keyboard line up more precisely with each other's overtones. (The overtones are farther apart than theoretically pure because of the stiffness of piano strings.) This makes for a more agreeable sound.

But when you layer Grand Piano or Bright Piano with another sound, the Mark 5 substitutes a "hidden" version of the piano sound that is *not* stretch-tuned, so that it is in tune with the other sound in the layer.

POLYPHONY

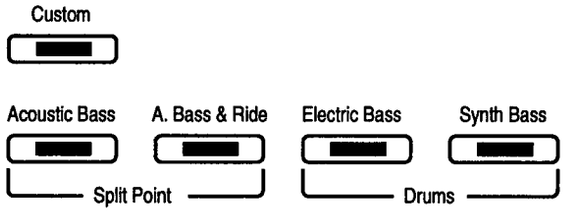
The Mark 5 Ensemble Grand has a maximum *polyphony* of 32 notes. That means that it can play as many as 32 notes at one time. This allows you to play from the keyboard and use the sustain pedal freely with little worry about running out of notes, or to create MIDI sequences with lots of parts.

You should know, however, that when two sounds are layered, each key you press actually plays two notes. Furthermore, since some of the individual sounds themselves are already made up of two layers (see the table below), layering these sounds with others will further reduce polyphony.

The Mark 5 employs a sophisticated method of "note allocation," so that your playing will sound natural even if more than 32 notes are played at one time.

SOUND	Number of Layers	SOUND	Number of Layers
Grand Piano	1	Choir	1
Bright Piano	1	Cathedral Choir	2
Modern Piano	2	Fast Strings	1
Ragtime Piano	2	Slow Strings	2
Electric Piano	2	Grand Piano (without stretch tuning)	1
Electric Piano 2	2	Bright Piano (without stretch tuning)	1
Harpsichord	2		
Forte Harpsi	2	Choir Layer	1
Jazz Organ	2	Strings Layer	1
Rock Organ	2	Acoustic Bass	1
Pipe Organ	2	A. Bass & Ride	2
Pipe Organ 2	2	Electric Bass	1
Acoustic Guitar	1	Synth Bass	2
12 String Guitar	2	Drums	1

Left Splits



The buttons in the Left Splits section of the panel allow you to "split" the keyboard into two parts. The right-hand part of the keyboard plays whatever sound is currently selected in the Sound Select section; the left-hand part plays a bass or Custom sound, selected by pressing one of the Left Splits buttons—or, in the case of the Drums, pressing two buttons simultaneously. The buttons illuminate to indicate what is active.

Splits are an easy way to make one performer sound like two. When you play the keyboard, your left hand plays one sound and your right hand plays another.

Press a different Sound Select button while a split is active to change the right sound but not the left one. Press a different Left Splits button (or buttons, for Drums) while a split is active to change the left sound but not the right one. Press the active Left Splits button(s) a second time to cancel a split.

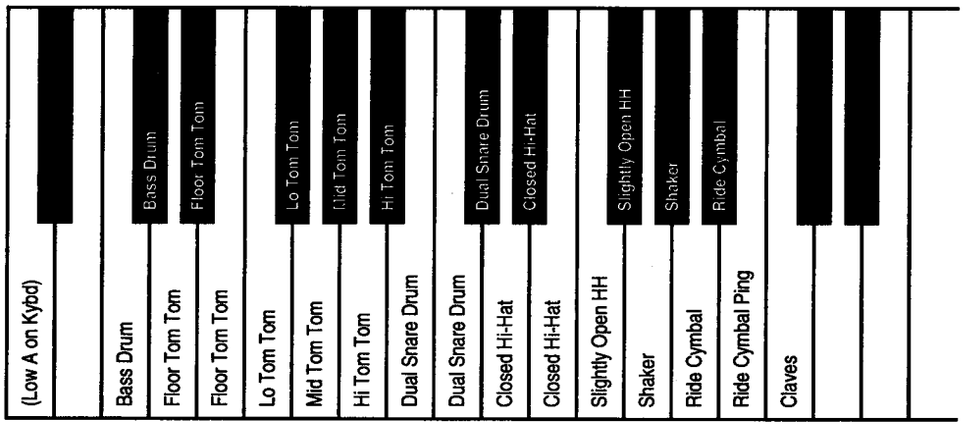
Selecting a Left Splits sound transmits two MIDI controller messages (see page 19 for more information on transmitting split data): #81 contains the split program number, and #80 contains the split point.

List Of Left Splits Sounds

SOUND	Comments	SOUND	Comments
Acoustic Bass	This plucked upright bass sound plays up to D a ninth above middle C, if the split point is set that high.	Synth Bass	This layered sound produces a smooth but synthetic timbre. It plays across the entire keyboard, if the split point is set for it.
A. Bass & Ride	All bass notes are layered with a ride cymbal. This sound plays up to D a ninth above middle C, if the split point is set that high.	Drums	Velocity switches the snare drum sound from soft to hard. Drum sounds are repeated on adjacent keys for flams, rolls, etc. See the illustration below.
Electric Bass	Velocity switches between picked and "slap" sounds. This sound plays up to D a ninth above middle C, if the split point is set that high.	Custom	This button lets you specify the left sound. See the discussion on page 12.

For information on playing these sounds, see pages 27–29.

Drum Key Assignments



SPLIT POINT

The *split point* is the point on the keyboard where the left sound and right sound meet. The default split point set at the factory is E below middle C.

To change the split point, press the two buttons with the label Split Point printed beneath them at the same time; the lights in the buttons will blink. Then press the key you wish to be the split point. (The key you press will be the top key of the left sound.) This split point is now the default for all Left Splits sounds, until you change it or turn off the Mark 5.

To cancel selecting the split point while the two Split Point lights are blinking, press any button on the control panel.

Setting the split point transmits a MIDI controller message #80, the value of which is the key number of the split point.

TRY IT

- Press the Grand Piano button.
- Press the A. Bass & Ride button. Play some notes up and down the keyboard, noticing the Grand Piano in the right part of the keyboard and the A. Bass & Ride in the left part.
- Press the two Split Point buttons. Their lights begin flashing.
- Press middle C. The lights will stop flashing. Play the keyboard again, noticing that the A. Bass & Ride now plays up through middle C.
- Press A. Bass & Ride again to remove the left split.

CUSTOM

You can optionally select any available sound to be the left sound. You accomplish this by pressing and holding the Custom button, pressing the desired Sound Select button, and releasing the Custom button. The selected sound will become the left split sound. This sound is "remembered," and if the Custom button is selected later, the same sound will be used. (The Custom sound is reset to Grand Piano when the power to the instrument is turned on.)

The Variation button also works for Custom sounds, so that you can select any of the 18 available sounds in the Sound Select section as a Custom left split sound.

TRY IT

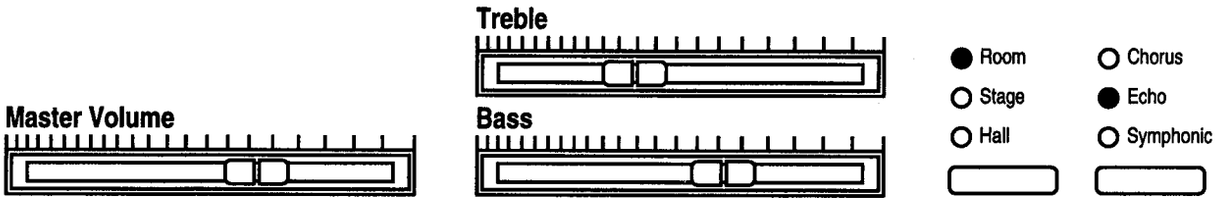
- Press the Choir button.
- Press and hold the Custom button.
- While holding the Custom button, press the Harpsichord button.
- Release the Custom button.
- Play the keyboard. Notice that the Harpsichord is the left sound, while the Choir is the right sound.

OCTAVE SHIFT

In setting up a left split, you may wish to make the right or left sound higher or lower—especially if you use a Custom left split to play duets at the keyboard (e.g., piano on the left and strings on the right). The Mark 5 Ensemble Grand gives you the ability to shift the octave in which each part sounds. See page 17 for details on how to use the Left Octave Shift and Right Octave Shift functions.

Digital Reverb & Effects

The Digital Reverb & Effects section of the panel contains controls that affect the sound of the instrument as a whole.



MASTER VOLUME

The Master Volume slider controls the overall volume (loudness) of the Mark 5 Ensemble Grand. Move it to the right to increase the volume, and to the left to decrease the volume; when moved all the way to the left, it silences the instrument.

Master Volume affects not only the volume produced by the internal sound system, but also the volume produced by equipment connected to the Headphone or Audio Out jacks (see page 20).

CAUTION: Turn the Master Volume down before connecting headphones or using the Audio Out jacks.

Moving the Master Volume slider does not transmit volume messages over MIDI.

TREBLE AND BASS

The Treble and Bass sliders are tone controls, allowing you to adjust the tonal balance of the overall sound to your liking. Treble controls high frequencies, and Bass controls low frequencies.

When the controls are centered, they have no effect on the sound. Moving the Treble slider to the *right* boosts treble frequencies; moving it to the *left* cuts treble frequencies. The Bass slider operates in the same way on bass frequencies.

The Treble and Bass sliders affect the sound produced by the internal speakers, the Headphone jack, and the Audio Out jacks.

Reverb And Effect Buttons

For a heightened sense of sonic realism, the Mark 5 Ensemble Grand provides you with two independent types of digital signal processing: Reverb and Effects. Each is controlled by its own button; pressing the button allows you to select one of the three "flavors" available for each type, as indicated by the lights above the button, or to turn it off (when none of the lights is lit).

Reverb, or reverberation, occurs naturally when sound undergoes multiple reflections off the walls of an enclosed space. These reflections blend together into a "wash" of sound that adds warmth and presence to music. The reverb button provides you with reverberation that represents three different room sizes:

- Room—The intimacy of a chamber-music room.
- Stage—The ambience of a performance stage.
- Hall—The spacious atmosphere of a concert hall.

Stage is the default reverb setting when you turn the instrument on.

The effects are as follows:

- Chorus—The effect of many instruments playing together instead of one.
- Echo—A repetition of the sound, as if it were bouncing off a wall.
- Symphonic—A unique combination of chorus and echo.

  When Symphonic is used with Room, Stage, or Hall Reverb, it slightly increases the reverb that is already present.

OFF is the default effect setting when you turn the instrument on.

Each of the nine Sound Select buttons can remember its own reverb and effect settings, just as it can remember the status of the Variation button. So you can give each sound a different combination of reverb and effect, which will be recalled whenever you press that Sound Select button. These settings are reset to factory defaults when the power is turned on.

Selecting a reverb or effect type causes the Mark 5 Ensemble Grand to transmit a MIDI controller #83 message. Selecting the Symphonic effect transmits a MIDI controller #68 ON message. Selecting an effect other than Symphonic transmits a MIDI controller #68 OFF message.

Try It

- Press the Acoustic Guitar button.
- Press the reverb button until none of the lights above it is lit.
- Do the same with the effect button.
- Play the keyboard, paying close attention to the sound.
- Press the reverb button twice, to select Stage.
- Press the effect button once, to select Chorus.
- Play the keyboard again, noticing the difference in the sound.

Options

TRANSPOSE

Transpose allows you to play the keyboard in one key and have the notes sound in another. This is useful when accompanying singing, if the key of the written music is too high or two low for the singer, or when playing music written for a transposing instrument, such as a clarinet.

To change the transposition, press and hold the Transpose button, play a key on the keyboard, then release the Transpose button. The Middle C key will now sound the note you selected, and the instrument will be transposed by the interval between Middle C and the note you selected. For example, to transpose up a fifth, press the G key above Middle C.

Pressing the Transpose button again will toggle the transposition between "C" (normal) and the selected transposition key. The Transpose button will remain lit while the instrument is transposed. Transposition is reset when power to the Mark 5 is switched on.

The Transpose setting affects the note messages that the instrument transmits via MIDI as well as the pitch at which the keyboard plays.

TRY IT

- Make sure the Transpose button is OFF (not illuminated).
- Play middle C. Sing the note to help you remember the pitch.
- Press and hold the Transpose button and play the E above middle C. Then release the Transpose button.
- Play middle C again. Notice that the pitch is now higher than before.
- Press the Transpose button again to turn the transposition off.
- Play middle C one more time. Notice that it is back at its original pitch.

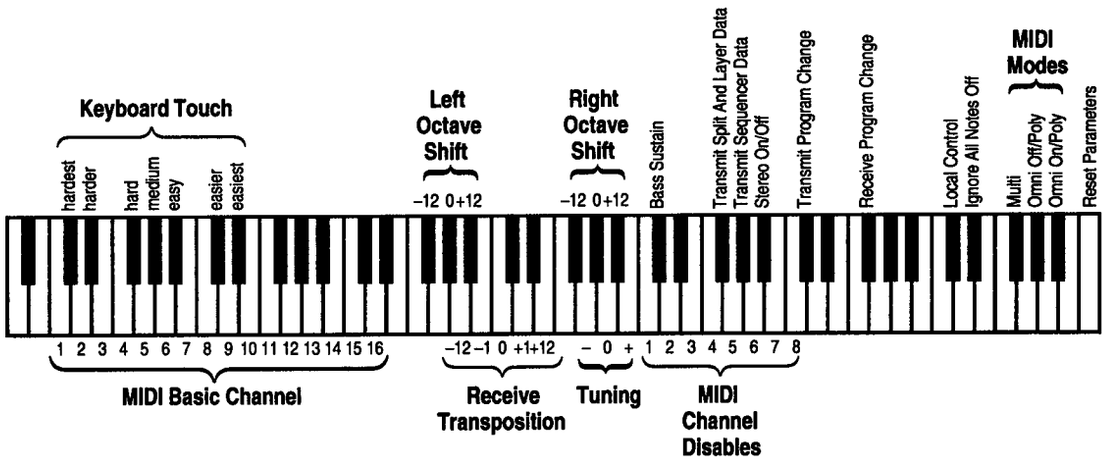
MIDI

The MIDI button gives you entry to MIDI Edit Mode, which is where you access and change settings pertaining to MIDI, as well as other settings that affect the performance of the instrument as a whole. MIDI itself, and the MIDI connections on the Mark 5 Ensemble Grand, are explained on pages 43–48.

Entering MIDI Edit Mode

To enter MIDI Edit Mode, press and hold the MIDI button. The button lights up. Releasing the MIDI button will exit MIDI Edit Mode.

While in MIDI Edit Mode (while the MIDI button is held down), you change settings by pressing keys on the keyboard. The following illustration shows which keys correspond to each setting:



These settings are explained in the discussion that follows.

NOTE: The Mark 5 "remembers" changes to many of these settings, even when you turn the power off. It retains these changes in memory for about one week after the power is turned off. If you do not use the Mark 5 for a week, you can turn the power on for one hour and then off again to extend the memory of your settings. If your settings are forgotten, they will be reset to the factory defaults.

Reset Parameters

Pressing the Reset Parameters key while in MIDI Edit Mode will return all of the settings to the factory defaults.

Tuning

The Mark 5 will never go out of tune. However, when playing with other instruments, you may want the ability to shift the tuning. You can do so by as much as a quarter tone (half a half step) up or a quarter tone down. Three keys affect tuning while in MIDI Edit Mode. The middle of these resets the tuning to standard concert pitch (A 440). The key to the right of this raises the pitch; the key to the left of it lowers the pitch. You can change the tuning in increments of two *cents* (two hundredths of a half step) by pressing the appropriate key repeatedly to raise or lower the pitch. The Mark 5 retains the Tuning setting, even when the power is turned off.

Keyboard Touch

You can adjust the sensitivity of the keyboard touch (how the dynamics of the sounds respond to key velocity) by pressing one of the seven keys that govern this setting. "Easiest" is the most sensitive, while "hardest" is the least sensitive (requiring higher key velocities to obtain louder notes). For example, an easy touch is suggested for a child beginning piano lessons, while an experienced player may prefer a harder keyboard touch setting. The instrument retains the Keyboard Touch setting, even when the power is turned off.

Left Octave Shift

The Left Octave Shift keys affect whether the left sound in a split will be at normal pitch (0; the default) an octave lower (–12 half steps), or an octave higher (+12). This is useful, depending upon the sound, the notes you wish to play, and the split point. If you press the –12 or +12 key repeatedly, you shift the pitch by successive octaves, up to five octaves in either direction.

Left Octave Shift does not affect the MIDI note messages the Mark 5 transmits.

Changing the Left Octave Shift setting transmits a MIDI controller message #77.

Left Octave Shift is reset to 0 every time the power to the Mark 5 is turned on.

Right Octave Shift

The Right Octave Shift keys work just the same as the Left Octave Shift keys, except that they affect the sounds in the right portion of a split.

Right Octave Shift does not affect the MIDI note messages the Mark 5 transmits.

Changing the Right Octave Shift setting transmits a MIDI controller message #76.

Right Octave Shift is reset to 0 every time the power to the Mark 5 is turned on.

Bass Sustain

When using the Left Splits, most music and playing styles require the sustain pedal to be ignored for the left half of the split. So the default setting for Bass Sustain is OFF; that is, the sustain pedal normally *does not* affect the bass sounds.

Should you wish to have the sustain pedal affect the bass sound (for example, in a Custom split), you can do so by pressing the Bass Sustain key while in MIDI Edit Mode. To disable sustain control to the bass again, press the key again.

Changing the Bass Sustain setting transmits a MIDI controller message #78.

Bass Sustain is reset to OFF every time the power to the Mark 5 is turned on.

Stereo On/Off

When this function is ON (the default setting upon power-up), the audio outputs are stereo. When it is OFF, they are mono.

MIDI Basic Channel

To select the Basic Channel, press the corresponding key labeled 1–16 in the illustration. This is the channel on which the instrument transmits MIDI messages. In addition, in Omni Off/Poly mode, if the Basic Channel is within the range 1–8, it is the channel on which the instrument responds to MIDI messages; all other channels are ignored. (In Omni On/Poly mode, the instrument responds to all channels as if they were the Basic Channel. In Multi mode, the instrument responds to Channels 1–8 independently.) If the Basic Channel is set between 9 and 16, the Mark 5 will not sound. In addition, only Channels 1–4 can do splits and layers. The Basic Channel is reset to 1 every time the Mark 5 is turned on.

MIDI Mode

The three MIDI Modes available on the Mark 5 Ensemble Grand (Omni On/Poly, Omni Off/Poly, and Multi) are explained on page 45. Multi, the default Mode (the one set at the factory), is the Mode to use to sequence independent parts. Press the appropriate key of the three available to select the MIDI Mode you desire. The Mark 5 retains the MIDI Mode, even when the power is turned off.

MIDI Channel Disables

In Multi mode, you can disable response to any MIDI channel except the Basic Channel by pressing the corresponding key, labeled 1–8 in the illustration. Disabling a channel causes the Mark 5 Ensemble Grand to ignore incoming MIDI messages on that channel. (Pressing the key again re-enables response on that channel.) This is useful if you have a sequencer and another MIDI tone generator, and wish to dedicate one or more MIDI channels to the tone generator.

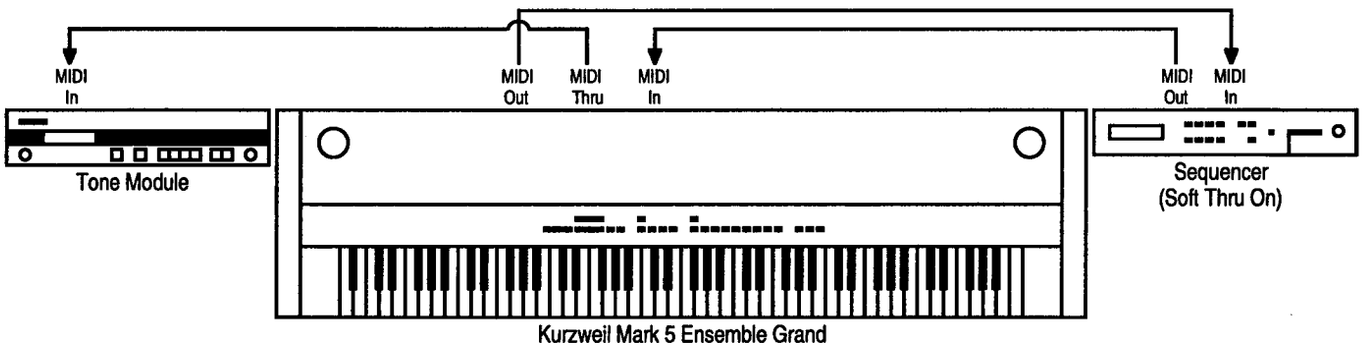
NOTE: You can disable playback of sequencer tracks by disabling the appropriate channels.

The Mark 5 retains channel disable settings, even when the power is turned off.

Local Control

Local Control is the connection between the keyboard of the Mark 5 and the internal sound-producing circuitry of the instrument. Normally, Local Control is ON; in fact, every time you power-up the Mark 5, it is automatically set to Local Control ON, so you can play the keyboard and hear the sounds of the instrument.

But there are reasons for setting Local Control to OFF. For example, if you use a sequencer and a tone module with the Mark 5. Most sequencers offer a feature known as "soft thru," which allows the MIDI Out port to function as both an Out and a Thru. This lets you to hear all connected tone generators during both recording and playback without having to unplug and replug MIDI cables.



The problem with this setup is that, during recording, for every key you play on the master keyboard, *two* notes sound: one that is played by the keyboard, and one that is played by the MIDI message passing through the sequencer and back into the instrument. In addition to sounding a little strange, this cuts the maximum number of notes you can play in half. To eliminate this problem, set Local Control to OFF. Then you only hear the note played by the MIDI message.

To turn Local Control back ON, press the Local Control key again in MIDI Edit Mode.

Ignore All Notes Off

There is a MIDI message called All Notes Off, and it fulfills a useful purpose: to silence notes that have inadvertently gotten "stuck on." Unfortunately, some MIDI devices, such as some Roland* equipment, use this message in a non-standard way: they transmit it every time all the keys on the keyboard are released. In some situations, this can cause notes to be cut off when you don't want them to be.

If you hear notes on the Mark 5 Ensemble Grand cutting off abruptly when using it as a MIDI slave or when connected to a sequencer, try turning ON the Ignore All Notes Off setting.

The Mark 5 retains the Ignore All Note Off setting, even when the power is turned off. (The default setting for this feature is OFF.)

* The name Roland is a trademark of Roland Corporation.

Receive Transposition

Receive Transposition allows incoming MIDI messages to be transposed. Most of the time you should use the Transpose button on the front panel instead; this transposes the MIDI messages that are transmitted from the instrument, and if these messages are recorded by a sequencer, they will not need to be transposed on reception (during playback).

If you do need to transpose MIDI messages that are received, the Receive Transposition feature gives you the option. Of the five keys indicated in the illustration, the middle one resets the transposition to 0. The keys to the immediate left or right will transpose down or up by one half step, respectively. The keys to the left and right of those will transpose down or up by one octave (12 half steps), respectively. You can press the transposition keys more than once to transpose by multiple half steps or multiple octaves.

The Mark 5 retains the Receive Transposition setting, even when the power is turned off.

Transmit Program Change

Ordinarily, when you press a program select button, the instrument transmits the corresponding program change message. You can disable this function by pressing the Transmit Program Change key while in MIDI Edit Mode. This can be useful if, for example, you want to change sounds on your master instrument (the Mark 5 Ensemble Grand), but not on any slaves that are connected to it.

To re-enable transmission of program change messages, press the Transmit Program Change key in MIDI Edit Mode again. The Mark 5 retains the Transmit Program Change setting, even when the power is turned off.

Receive Program Change

The Receive Program Change key functions just as the Transmit Program Change key does, except that it affects whether or not the instrument *receives* program change messages (more accurately, whether it *responds* to program change messages that it receives). This key alternately disables and enables reception of program change messages.

The Mark 5 retains the Receive Program Change setting, even when the power is turned off.

Transmit Split And Layer Data

When the Transmit Split And Layer Data function is ON (which is the default setting), MIDI controller messages are transmitted when you press a Left Splits button, select a split key, layer two sounds, adjust the layer volumes, or change the Bass Sustain setting. When this function is OFF, the Left Splits program and layered program are transmitted as MIDI program change messages. This can be useful if you record sequences using an external sequencer.

The Transmit Split And Layer Data setting is reset to ON every time the power to the Mark 5 is turned on.

Transmit Sequencer Data

When the Transmit Sequencer Data function is ON, the data from the internal Demo sequences are transmitted out the MIDI Out port while the demos are playing. When it is OFF (the default setting), the data are used to play the internal sounds only.

The Transmit Sequencer Data setting is reset to OFF every time the power to the Mark 5 is turned on.

The Demo button is discussed on page 5.

Additional Information

This section of the manual discusses three main areas: 1) Connections to the Mark 5 Ensemble Grand; 2) Service; and 3) Specifications.

HEADPHONE JACK

A stereo headphone jack is located on the left front of the instrument, providing you with a means to play or practice at the Mark 5 Ensemble Grand in privacy. Inserting a plug into the jack disables the internal speakers and one pair of audio outputs (Switched Out).

REAR PANEL

The rear panel of the Mark 5 Ensemble Grand is the location of connectors for such things as AC power, audio inputs and outputs, and MIDI.

AC In

One end of the power cord fits in the AC In receptacle on the rear panel; the other end of the cord plugs into a standard AC wall outlet.

Next to the AC In receptacle is an accessory power receptacle, which provides power for future options. The Power switch on the Mark 5 Ensemble Grand controls the power to this socket.

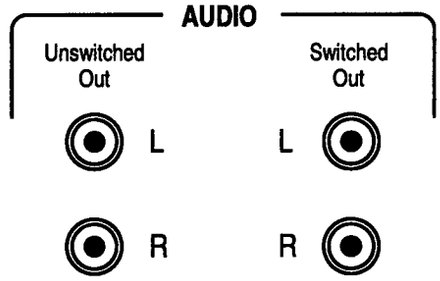
MIDI Ports

The functions of the three MIDI ports are discussed on page 43.

Pedals

Depending on the cabinet style of your Mark 5 Ensemble Grand, you may see a connector labeled PEDALS on the rear panel. This is reserved for future options.

Audio Out Jacks

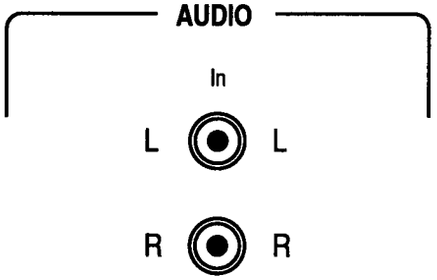


Four RCA jacks provide audio output to external equipment, such as a home stereo, a PA system, or a tape recorder. They are configured in two pairs, each pair consisting of a Left and a Right output for a complete stereo signal. All four provide line-level signals.

The outputs labeled Switched Out are switched off when headphones are plugged into the headphone jack, while those marked Unswitched Out are not.

The Switched Outs are ideal when using a dedicated external speaker system or subwoofer system, which you would want to be silenced when practicing with headphones. The Unswitched Outs are useful for tape recording with headphones plugged in, or if you wish to mute the internal speaker system (by inserting a "dummy" plug—one that is not connected to anything—into the headphone jack) while using a more powerful external amplifier system. (IMPORTANT: The dummy plug must be a stereo plug. A monaural plug inserted into the headphone jack will not only shut off the speakers, but it will also completely disable the right audio channel.)

Audio In Jacks



There are two RCA jacks available for audio input from external equipment, such as a tone module, a CD player, or a tape recorder. These inputs are directed to the Left and Right channels of the internal audio system.

These inputs are inserted after the digital reverb and delay effects; that is, the internal effects will not be applied to the signal from an external source.

WARNING: The signal that is input via these jacks will play at full volume! These inputs are not affected by the Master Volume, Treble, and Bass controls of the Mark 5 Ensemble Grand. If you wish to be able to control the level of the external device connected to these inputs, the device must have an output level control of its own.

The Audio In jacks accept line-level signals. (In order to use a microphone, you must boost the signal by passing it through a preamplifier.)

SERVICE

The Mark 5 Ensemble Grand contains no user-serviceable parts. In the event that you should experience a problem with the operation of the instrument, see your local Young Chang/Kurzweil dealer.

SPECIFICATIONS

Following are physical, audio, electrical, and environmental specifications for the Mark 5 Ensemble Grand.

Physical

▪ Height:	31.75"	(80.6 cm)
▪ Width:	56"	(142.2 cm)
▪ Depth:	22.75"	(57.8 cm)
▪ Weight:	176 lbs.	(80 kg)

Audio

▪ 80-Watt Biamplification:	2 x 25 Watts for woofers 2 x 15 Watts for tweeters
▪ 4 Speakers:	2 x 6.5" (16.5 cm) woofers in a ported enclosure 2 x 1" (2.5 cm) dome-type tweeters
▪ Switched Audio Outputs:	0.25 volts RMS for *ff* piano music with the Master Volume slider at maximum and the Treble and Bass sliders centered. Output impedance = 340 ohms. Excessive loading of these outputs will affect the sound of the internal speakers.
▪ Unswitched Audio Outputs:	0.25 volts RMS for *ff* piano music with the Master Volume slider at maximum and the Treble and Bass sliders centered. Output impedance = 500 ohms. Loading of these outputs will not affect the sound of the internal speakers.
▪ Audio Inputs:	0.5 volts RMS will produce a level equivalent to *ff* piano music. Input impedance = 300K ohms. The Master Volume, Treble, and Bass sliders do not affect the signal delivered through these inputs.
▪ Headphone Output:	Source impedance = 47 ohms; recommended load impedance = 50 ohms or greater. Level is 0.5 volts RMS = 1 mW at 100 ohms for *ff* piano music with the Master Volume slider at maximum and the Treble and Bass sliders centered; 8 volts RMS = 280 mW absolute maximum. Plugging in headphones switches off the internal speakers and the Switched Audio Outputs.

Electrical

	120VAC	*240VAC*
▪ Voltage Range:	100–120 volts RMS	200–250 volts RMS
▪ Frequency Range:	48–65 Hz	48–65 Hz
▪ Power Consumption:	1.3 Amps nominal	0.7 Amps nominal
▪ Accessory Power Receptacle:	3.0 Amps maximum	1.5 Amps maximum

Environmental

▪ Temperature (Operating):	5 to 40°C	(40 to 104°F)
▪ Temperature (Storage):	–25 to 85°C	(–13 to 185°F)
▪ Relative Humidity (Operating and Storage):	5 to 95%, non-condensing	

PLAYING THE MARK 5 ENSEMBLE GRAND

By now you're at least somewhat familiar with the many realistic sounds that the Mark 5 Ensemble Grand has to offer. But when it comes to realism, the sounds themselves are only half of the equation. The other half is that those sounds be played in a realistic way. That's what this part of the book addresses.

This section begins with a discussion of playing techniques, taking the different families of sounds in the order that they appear on the front panel. Then there is an overview of using split and layered sounds, and how to adapt standard sheet music to the Mark 5 Ensemble Grand.

After that, there is a selection of music designed to demonstrate some of these ideas.

Piano

The piano is the most logical place to begin discussing playing the Mark 5 Ensemble Grand, for it is the piano that the instrument most resembles.

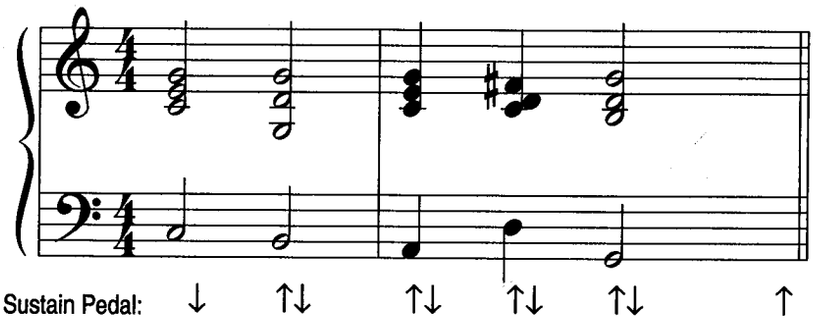
The keyboard of the Mark 5 Ensemble Grand has been designed to simulate that of the grand piano; the Grand Piano sound likewise simulates the sound of an acoustic grand piano. Musically, this means that when playing piano music on the Mark 5 Ensemble Grand, you should take advantage of the expressiveness—the variations in loudness and softness—that it offers.

USING THE PEDALS

An important aspect of piano playing is the use of the sustain pedal. For best results, use *syncopated* pedaling. What this means is that, instead of putting the pedal down at the same time you play a note, you put it down just after the note. When you play the next note, the pedal comes up as the key goes down, and then the pedal immediately goes down again. This ensures a smooth sound that doesn't stray into either choppiness or blurriness.

TRY IT

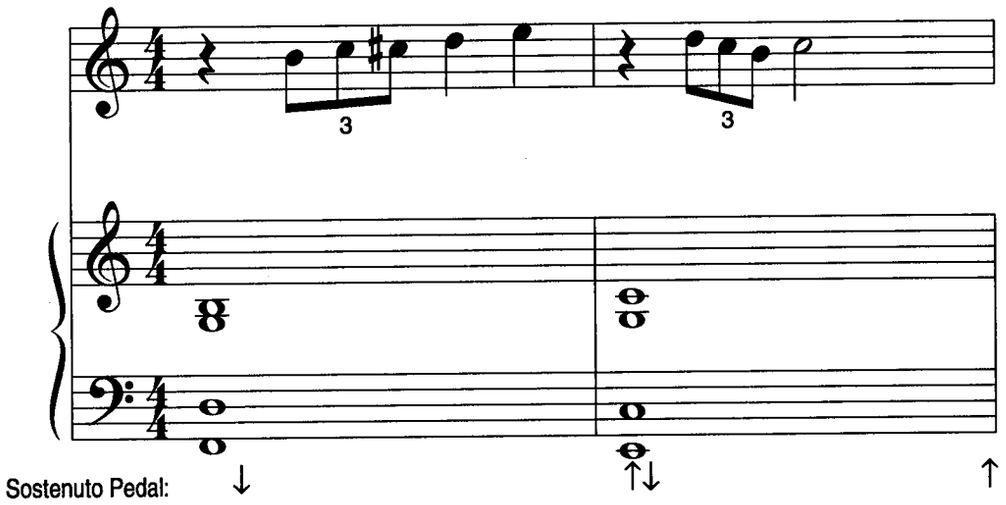
- Select the Grand Piano sound.
- Play the following example. When your hands press *down* on the keys, lift your foot *up* from the sustain pedal; press the pedal again immediately after releasing it.



The sostenuto pedal is used less frequently than the sustain pedal, and in classical piano music the composer usually calls for it explicitly. But it can be valuable in playing sheet music editions of popular songs, allowing you to sustain the accompaniment chords and at the same time play the melody without blurring.

TRY IT

- Select the Grand Piano sound.
- Play the following example, using syncopated pedalling for the chords, but on the sostenuto (middle) pedal. Play the melody with your right hand.

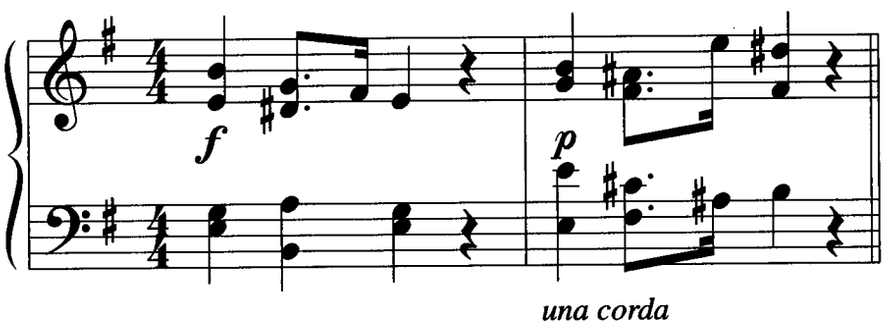


On a grand piano, the soft pedal shifts the keyboard and action sideways, so that the hammers strike fewer strings—two instead of three in the treble, one instead of two in the bass. For this reason, the soft pedal is often indicated in music by the Italian name *una corda* ("one string"). In addition to striking fewer strings, the hammers also strike with a softer part of their surface. The overall result is a sound that is not only softer in volume, but more muted in color as well.

On the Mark 5 Ensemble Grand, the soft pedal produces exactly the same result as on a grand piano—except that the keys don't move when you press the pedal. You can play hard with the soft pedal down and still obtain a wide dynamic range. But the overall sound is more subdued than when the pedal is up.

TRY IT

- Select the Grand Piano sound.
- Play the following example, pressing and holding the soft (left) pedal for the second measure, as indicated by the *una corda* marking beneath the staves.



OTHER PIANO SOUNDS

Different kinds of piano sound are appropriate to different musical styles:

- Bright Piano is ideal for up-tempo rock.
- Modern Piano is an excellent choice for pop or rock ballads.
- Ragtime Piano is made to order for the music of Scott Joplin.

Electric Piano

The beautiful, bell-like sound of the Electric Piano calls for an emphasis on sustained notes. Remember that striking the keys hard will change from the bell-like tine sound to a classic overdriven electric piano sound.

Electric Piano 2 accentuates the difference between soft and hard key strikes by switching, rather than cross-fading, between the tine and overdriven sounds. The built-in stereo chorus and tremolo make it an excellent choice for rock ballads.

Harpsichord

The harpsichord is usually heard playing baroque or classical music (e.g., Bach or Mozart), although it is sometimes used for a special effect in pop music. Since real harpsichords aren't velocity-sensitive, neither are the harpsichord sounds in the Mark 5 Ensemble Grand.

Harpsichords typically have different *stops* (sounds), in different octaves, built-in. These stops can be used together for a full sound, or individually when less power is required. The left pedal on the Mark 5 Ensemble Grand lets you take out and bring in the octave "stop" in the harpsichord sounds.

Harpsichord music generally calls for fewer notes played at one time, with more moving notes, than the piano plays. For an authentic-sounding performance, don't use the sustain pedal, since real harpsichords don't have them.

Chords on the harpsichord usually are "rolled" from bottom to top—that is, the keys are struck one after another rather than simultaneously. This is done to make the notes of the chord clear to the ear.

Organ

Since organ sounds sustain for as long as you hold down the keys, organ music often relies on held notes to greater extent than piano music does. Real organs are not velocity-sensitive, and so neither are the organ sounds on the Mark 5.

Electric Organs

Jazz Organ calls for a sparse, dissonant style of playing. A common technique is the *glissando*, in which the fingers slide rapidly up or down the keys.

Rock Organ is well suited to rock and pop music. It can be used to play everything from sustained chords to rhythmic chords to high solo lines.

The left pedal controls the depth and speed of the rotating-speaker sound. Press it to add tension to the music, and release it to make the music more relaxed.

Pipe Organs

Pipe Organ and Pipe Organ 2 are most at home with the music of the church, such as hymns, although they also excel in classical music.

The full-organ sound of the Pipe Organ spans a range of styles from reverent to menacing. Pipe Organ 2 is a "hollow" sound, produced by stops separated by several octaves; it's ideal for soft passages.

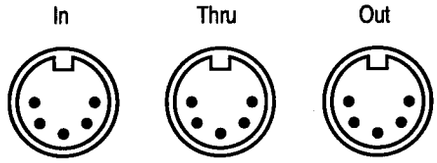
For the Pipe Organ sounds, the left pedal produces a decrescendo when pressed, and a crescendo when released. This gives you the same kind of dynamic control that a real organ has. One frequent application is to press this pedal on the final chord of a piece, to taper the volume at the end.

MIDI

"MIDI" stands for "Musical Instrument Digital Interface." It is an international specification that allows electronic musical instruments to communicate with each other, using a simple cable connection. It ensures that the Mark 5 Ensemble Grand will remain compatible with the instruments of today and tomorrow.

MIDI Connections

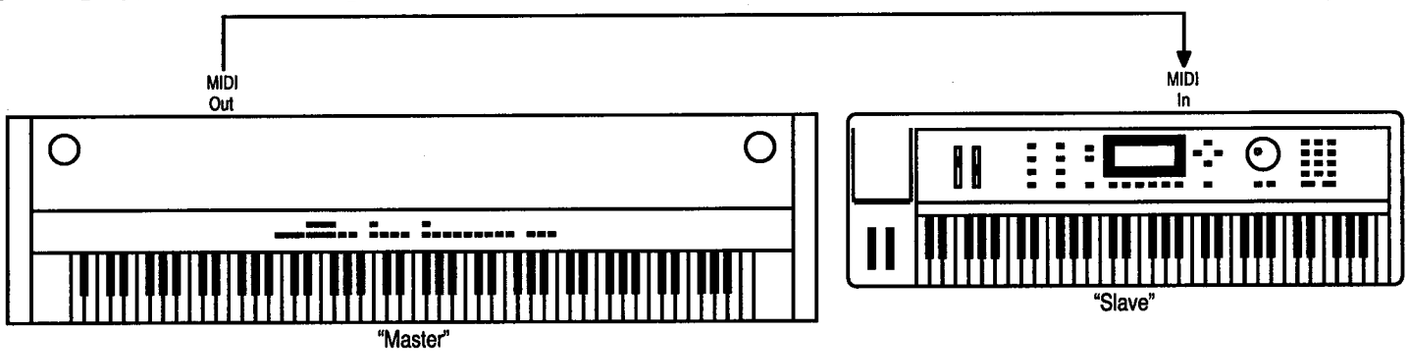
On the rear panel of the Mark 5 Ensemble Grand are three five-pin MIDI ports:



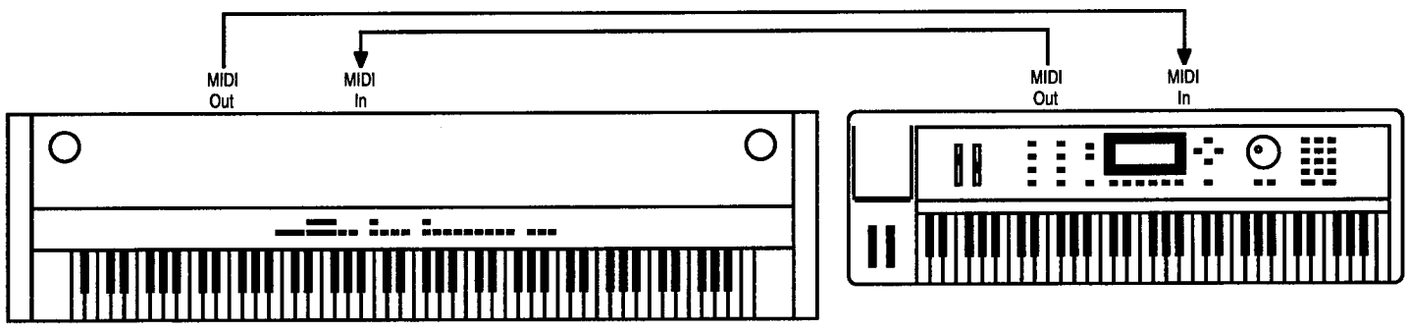
- In receives MIDI information from other equipment.
- Thru duplicates the information received by In and passes it to other equipment.
- Out sends MIDI information to other equipment.

Standard MIDI cables provide the connections between the MIDI ports of one piece of equipment and those of another. To keep things simple, there are only two valid MIDI connections: Out to In and Thru to In.

The simplest use of MIDI is to play two instruments at a time from the keyboard of one of them. This is known as a "master-slave" connection. Use a MIDI cable to connect the MIDI Out port of the "master" (the instrument whose keyboard you'll play) to the MIDI In port of the "slave."



If you connect In to Out, rather than Out to In, the other instrument becomes the master. And if you use two cables, connecting In to Out and Out to In, you can use either instrument as the master.

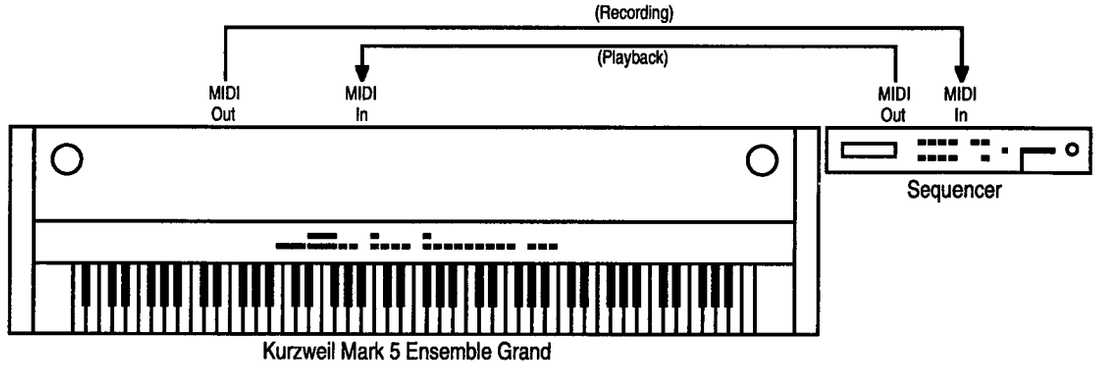


You probably will want to use the Mark 5 Ensemble Grand as your master keyboard.

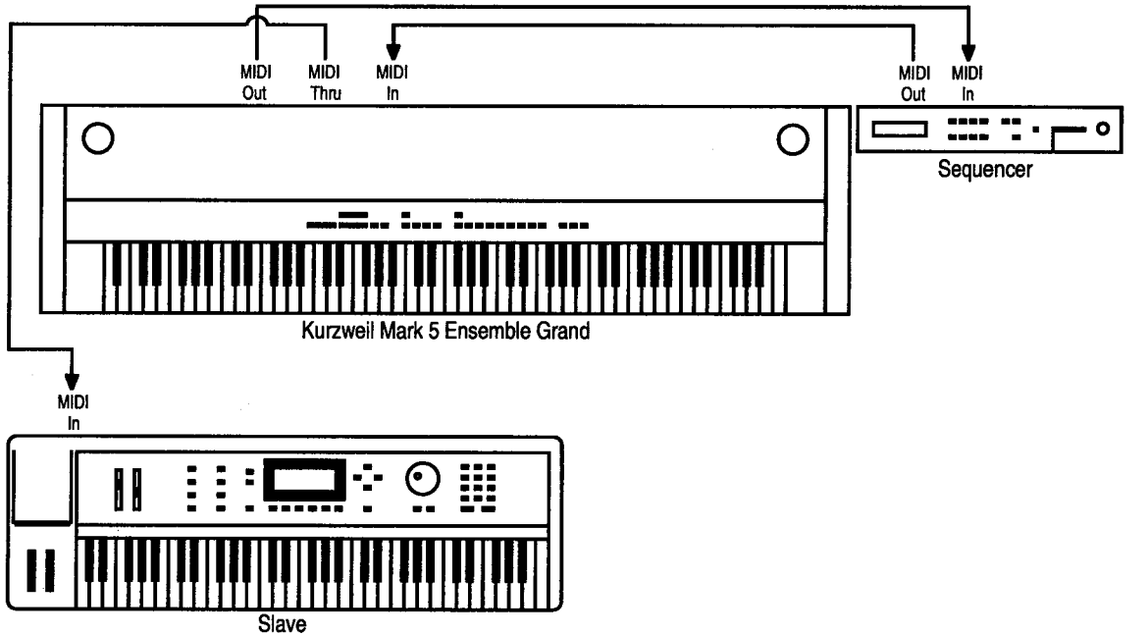
It is important to explain that what is sent over the MIDI cable is information (data), not sound. In fact, the usefulness of master-slave setups lies in having each instrument produce a different sound, resulting in a layering of sounds that expands on the layering that is possible within the Mark 5 itself.

The slave can be a MIDI organ, portable keyboard, synthesizer, tone module, drum machine, or effects device. If it doesn't have built-in amplification and speakers, you can connect its audio outputs to the Audio In jacks on the Mark 5.

Another application of MIDI is in using a *sequencer* to record and play back your performances. The sequencer can be a special hardware unit designed for that purpose, or it can be a home computer running special sequencing software. In either case, the MIDI connections are the same—Out to In and In to Out.

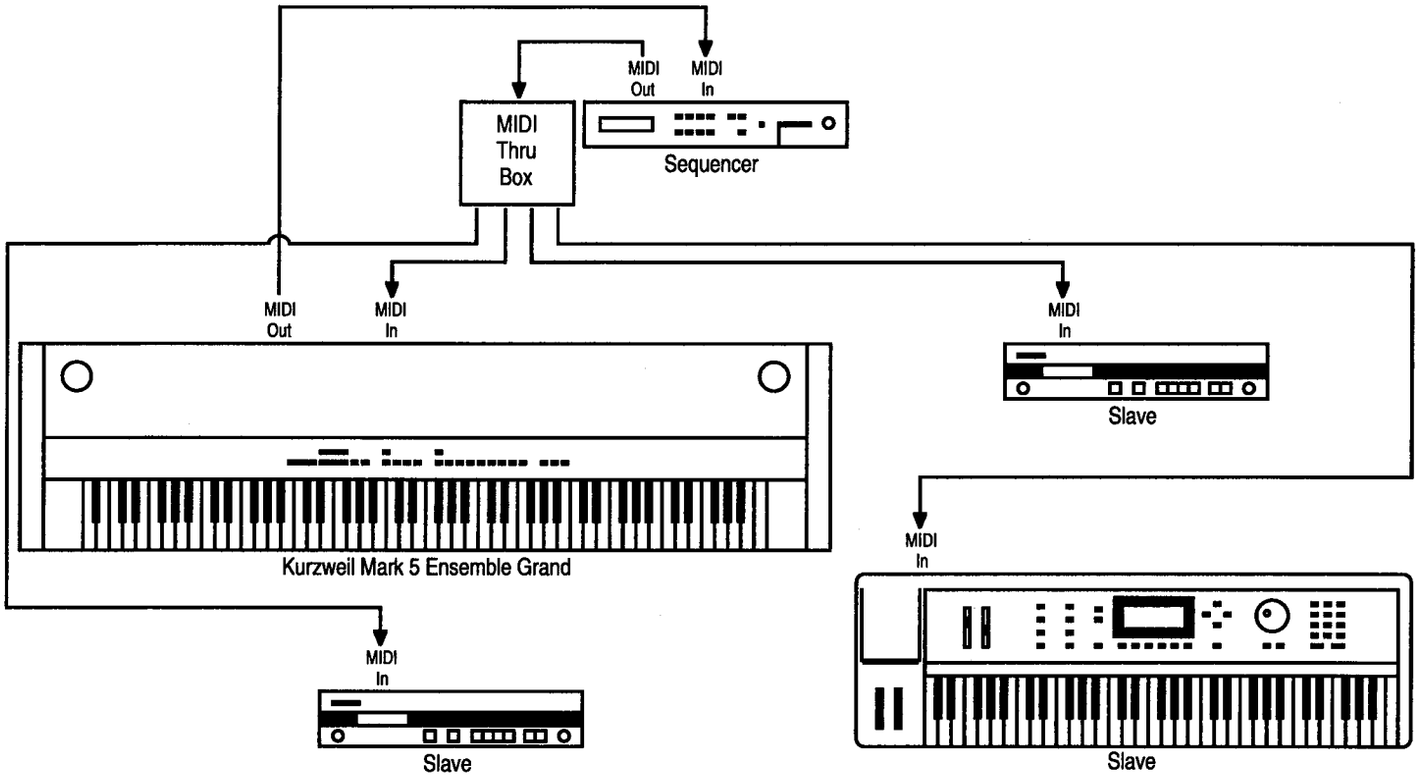


The MIDI Thru port on the Mark 5 Ensemble Grand allows you to form a "chain" of instruments, so that a sequencer can control not only the master instrument, but a slave as well.



When the sequencer plays back, the information is sent not only to the master, but also—via the Thru port—to the slave. If the slave, in turn, has a Thru port, another slave could be added to the end of this chain, and so on. Practically speaking, though, three or four instruments in a chain are as many as will work effectively; beyond that, transmission becomes unreliable.

The solution to the problem of too long a chain lies in either using a sequencer with multiple MIDI Outs or using a *MIDI Thru box*, which produces several parallel Thru signals from one In.



MIDI Channels And Modes

For MIDI to control several instruments, each playing a different part, at the same time, it relies on different *channels*. MIDI channels are like TV channels: an instrument has to be "tuned" to the correct one or it won't receive what is being transmitted. There are 16 channels available, and each one can transmit any number of notes to any number of instruments, over the same MIDI cable.

On the Mark 5, the Basic Channel (the one on which the instrument transmits) can be set to any channel, 1–16. For receiving, there are three MIDI *modes* available that govern how the instrument responds to different MIDI channels:

- OMNI ON/POLY. In this mode, the Mark 5 responds to all 16 MIDI channels, regardless of what channels is set as the Basic Channel. It plays the sound selected for the Basic Channel.
- OMNI OFF/POLY. In this mode, the Mark 5 responds on only the Basic Channel to which it is set. Since the instrument responds only to channels 1–8, the Basic Channel must be set within this range in order for the instrument to sound. If the Basic Channel is set between 9 and 16, the Mark 5 will not sound.
- MULTI. In this mode, the instrument responds to parts on the first 8 MIDI channels independently, with different sounds if you wish. (If the Basic Channel is set between 9 and 16, the Mark 5 will not sound.) This mode takes advantage of the multitimbral capabilities of the instrument (the ability to play several different sounds at the same time), in effect making it the equivalent of eight MIDI slaves in a single package. The only limit is the number of notes that can sound at one time, the maximum of which is 32.

  Multi mode is the default MIDI mode of the instrument. The instrument must be in this mode to play back sequenced parts with independent sounds.

In Omni Off/Poly and Multi modes, Channels 1–4 can have splits and layers assigned to them. Channels 5–8 can only have a single sound assigned to them.

Information on setting the Basic Channel and MIDI mode of the Mark 5 Ensemble Grand, as well as other settings, can be found on pages 16–19.

What MIDI Transmits

This discussion has mentioned transmitting and receiving information, but so far it hasn't said exactly what that information is. For this instrument, it falls into three categories:

- NOTE ON and NOTE OFF. When you press a key on the Mark 5 Ensemble Grand, it sends a MIDI message that says a note has begun, what MIDI channel it's on (the Basic Channel), what note it is, and the velocity with which the key was pressed. When you release a key, a similar message is sent saying that a note has ended, on which channel, what note it is, and the velocity with which the key was released (most MIDI instruments ignore release velocity). If you were to play the Mark 5 Ensemble Grand while a MIDI sequencer recorded your performance, you could play it back and the instrument would respond as if the keys themselves were being played again—except the keys wouldn't move.
- CONTROLLERS. When any of the three pedals is pressed or released, a special MIDI controller message is transmitted. Selecting Digital Reverb & Effects or Left Splits buttons, or selecting a layered sound, also transmits controller messages.
- PROGRAM CHANGE. Selecting a sound program results in a program change message that corresponds to the number of the sound selected. The programs on the Mark 5 Ensemble Grand are numbered 1–18 and 87–95, as follows:

SOUND	Program #	VARIATION	Program #
Grand Piano	1	Bright Piano	2
Modern Piano	3	Ragtime Piano	4
Electric Piano	5	Electric Piano 2	6
Harpsichord	7	Forte Harpsi	8
Jazz Organ	9	Rock Organ	10
Pipe Organ	11	Pipe Organ 2	12
Acoustic Guitar	13	12 String Guitar	14
Choir	15	Cathedral Choir	16
Fast Strings	17	Slow Strings	18

SPECIAL LAYER SOUND	Program #	LEFT SOUND	Program #
Grand Piano (without stretch tuning)	87	Acoustic Bass	91
		A. Bass & Ride	92
Bright Piano (without stretch tuning)	88	Electric Bass	93
Choir layer	89	Synth Bass	94
Strings layer	90	Drums	95

NOTE: Transmission and reception of program change messages can be disabled. See page 19.

Page 48 of this manual shows the complete MIDI Implementation Chart for the Mark 5.

Notes On Sequencing

More and more musicians are using MIDI sequencers as "tapeless recording studios." The advantages over tape recording include the abilities to change individual notes, alter the tempo without affecting the pitch, and substitute different sounds on playback. The following notes will help you get the most from the MIDI capabilities of the Mark 5.

- Many people prefer using the "soft thru" capability of their sequencers and setting their master keyboards to Local Control OFF. See page 18 for more information. If your setup is similar to that in the discussion, and your sequencer has "soft thru" capability, turn it on now, and set Local Control on the Mark 5 to OFF.
- Make sure the instrument is set to Multi mode. (This is the default MIDI mode. See pages 17 and 45 for more information.) This allows you to play back sequences using different sounds on different MIDI channels.
- Set the Basic Channel for the part you wish to record. (See page 17 for instructions.) Each part that uses a different sound should be recorded on a different channel. Many sequencers "rechannelize," making this step unnecessary. If your sequencer does not rechannelize, you must change the Basic Channel before recording each new part.
- Select the sound for the part *after* you have started recording. Give yourself an empty measure or two before the music starts in which to do this. This ensures that every time you play the sequence back, it will call up the right sounds.
- You can also insert these program changes in the sequence. Channels 1–4 can play splits and layers, or any single sound. Channels 5–8 can each play any single sound (1–18, 87–95).
- If you are using splits and layers on Channels 1–4, you will need to set MIDI controllers to do the splitting and layering. You can get the correct effect by pressing the front panel buttons and recording them into the sequencer. Alternately, you can send controllers 76–82 at any time, then send a program change message to activate them. The controller message the Mark 5 receives will not take effect until the following program change message for the main sound. This affects the order in which you should record messages into your sequencer.

  EXAMPLE 1. To set up an Acoustic Bass split with Grand Piano, and Middle C as the split point, send controller #81 (split program) with a value of 91 (Acoustic Bass program #), controller #80 (split point) with a value of 60 (Middle C key #), followed by a program change message for program 1 (Grand Piano). To cancel these parameters, set them to 0 (Controller #80 [split point] is an exception; setting it to 0 will make splits unavailable, so set it to the default value of 52 [E below Middle C].) and send another program change message.

  EXAMPLE 2. To set up a layer with Acoustic Guitar and Strings, with the Strings reduced in volume, send controller #82 (layer program) with a value of 90 (Strings layer program #), controller #79 (layer volume adjust) with a value of 4 (number of button presses by which volume is reduced), followed by a program change message for program 13 (Acoustic Guitar).
- If you want your Mark 5 to transmit regular program change messages 91–95 when you select Left Splits sounds from the front panel, you must turn OFF the Transmit Split And Layer Data parameter in MIDI Edit Mode; see page 19 for details.

CONTROLLERS

To use the Split Program controller (#81) or the Layer Program controller (#82), send the controller message with a value of the program number you wish to split or layer with.

To use the Split Point controller (#80), send the controller message with a value of the MIDI key number that you wish to be the split point. Middle C is 60.

To use the Layer Volume Adjust controller (#79), send the controller message with a value of the number of key presses that would have accomplished the adjust. Larger numbers will reduce the volume of the layer program more.

To use the Right and Left Octave Shift controllers (#76 and #77), send the controller message with a value of the number of half steps to transpose up (+) or down (–), plus 64. (For example, to transpose down an octave, the value would be 52.) This allows a range of –64 to +63 half steps.

To change the global Reverb and Effect setting, send a controller #83 message with any of the following values:

REVERB AND EFFECT NAME	Controller #83 Value	REVERB AND EFFECT NAME	Controller #83 Value
None	65	Echo	81
Room	66	Echo with Room	82
Stage	67	Echo with Stage	83
Hall	68	Echo with Hall	84
Chorus	73	Symphonic	89
Chorus with Room	74	Symphonic with Room	90
Chorus with Stage	75	Symphonic with Stage	91
Chorus with Hall	76	Symphonic with Hall	92

MIDI Implementation Chart

Manufacturer:
Young Chang

Date: 7/17/92
Version: 1.0

Model: Kurzweil Mark 5 Ensemble Grand

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1	1	
	Changed	1–16	1–8	
Mode	Default	X	Multi*	memorized
	Messages	X	Mode 1 & 3	memorized
	Altered	X		
Note Number		0–127	0–127	key range:
	True Voice	12–108	12–108	C0–C8
Velocity	Note ON	O	O	
	Note OFF	O	O	
After Touch	Keys	X	X	
	Channel	X	O	
Pitch Bender		X	O	
Control Change			mod wheel (MIDI 1) volume (MIDI 7) pan (MIDI 10)	
		bank select LSB (MIDI 32)	bank select LSB (MIDI 32)	
		sustain pedal (MIDI 64)	sustain pedal (MIDI 64)	
		sostenuto pedal (MIDI 66)	sostenuto pedal (MIDI 66)	
		soft pedal (MIDI 67)	soft pedal (MIDI 67)	
		symphonic on (MIDI 68)	symphonic on (MIDI 68)	
		right octave shift (MIDI 76)	right octave shift (MIDI 76)	
		left octave shift (MIDI 77)	left octave shift (MIDI 77)	
		bass sustain (MIDI 78)	bass sustain (MIDI 78)	
		layer vol. adjust (MIDI 79)	layer vol. adjust (MIDI 79)	
		split point (MIDI 80)	split point (MIDI 80)	
		split program (MIDI 81)	split program (MIDI 81)	
		layer program (MIDI 82)	layer program (MIDI 82)	
		reverb select (MIDI 83)	reverb select (MIDI 83)	
Program Change		O** 1–18	O** 1–18	
		87–95	87–95	
	True #	1–18	1–18	
		87–95	87–95	
System Exclusive		X	O	
System Common	Song Pos	X	X	
	Song Sel	X	X	
	Tune	X	X	
System Real Time	Clock	O	O	
	Messages	X	O	
Aux Messages	Local Control	X	O	
	All Notes Off	O	O	
	Active Sense	X	O	
	Reset	X	X	
Notes		* Use MULTI mode to assign different programs to each MIDI channel ** Can be disabled		

Mode 1: OMNI ON, POLY
Mode 2: OMNI ON, MONO
Mode 3: OMNI OFF, POLY
Mode 4: OMNI OFF, MONO

O = yes
X = no