The Beginner's Guide to MIDI

by

Craig Patterson

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What is MIDI?

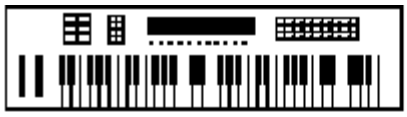
MIDI is a means for you to more easily make music, instead of buying tons (literally) of equipment that you need a warehouse to store, a doctorate to operate, and A&M Records Studio A to record.

The term MIDI stands for Musical Instrument Digital Interface. The term could more rightly be called Digital Interface for Musical Instruments, but perhaps the term DIMI would make the user sound somewhat less than intelligent.

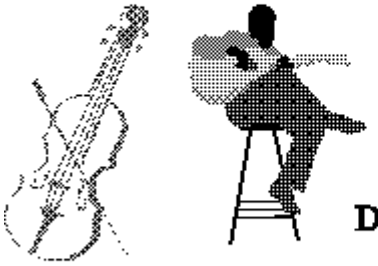
MIDI is simply a means of transferring data from one instrument to another, or from that instrument to a computer. What is this data? Whenever you play a key, make a program change, move a pedal, or move a slider, those actions produce computer data. This computer data is used because modern instruments are so complex that they need computers to be jammed inside them to take care of all the different actions going on.

Do all instruments have these computers?
No, they don't. Remember, MIDI is computer data, so right away you can assume that any instrument that isn't electronic, like a trumpet, won't be able to speak the MIDI language.

A very few home organs have MIDI, but no acoustic pianos come with it. All of today's synthesizers, professional or otherwise, do have MIDI.
The term "today's" means anything newer than about 1982 or 1983.



= MIDI

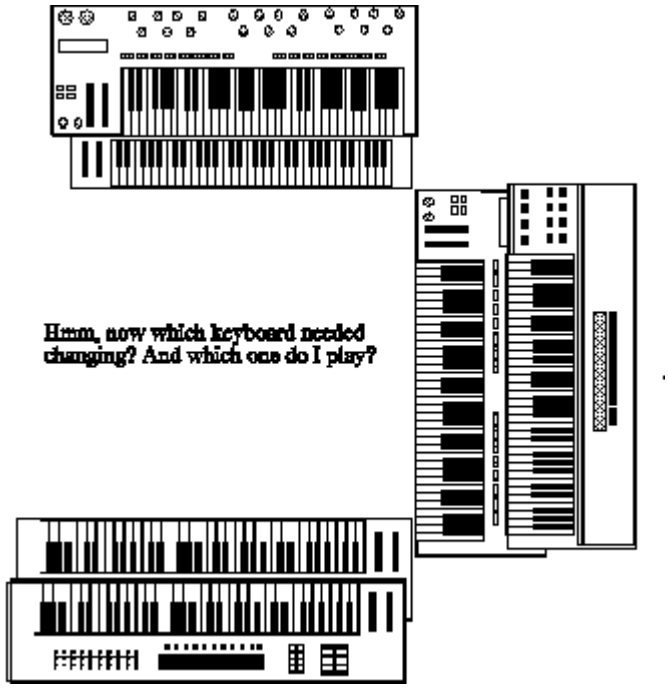


DOES NOT = MIDI

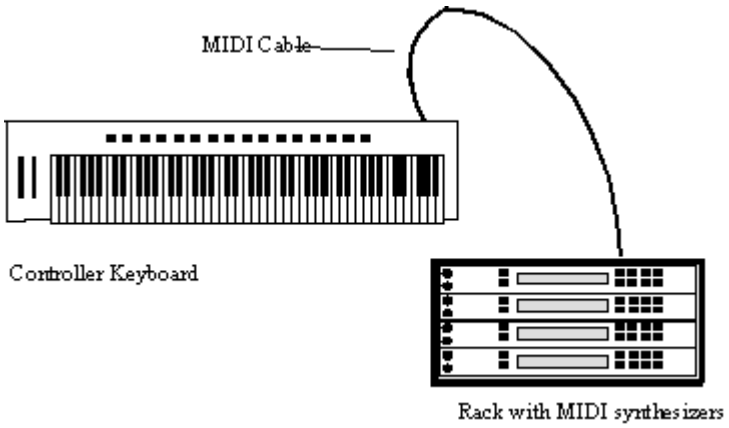
Why does MIDI exist?

In the 1970's, synthesizers were quickly becoming "the" instrument to play. As new keyboards came on the market, each was capable of fantastic new sounds. But, each one was a totally complete instrument in and of itself, with a keyboard and control panel. This wasn't a big deal until you started buying eight or ten of them to get all the cool sounds. Then what do you do with all those keyboards? Maybe in the studio there would be room, but live performance was another matter.

Let's say you could figure out a way to stack a whole mess of these monsters on stage. Each machine was capable of 16, 32, or 100 sounds, or whatever, so every time you wanted a new sound, a button needed to be pushed to get to it. So now it's in between songs, and you need six new sounds on six of the ten keyboards. Wild gymnastics occur when trying to do this, and even more gymnastics occur when you try to play each of those sounds on keyboards that may be four feet away from each other.

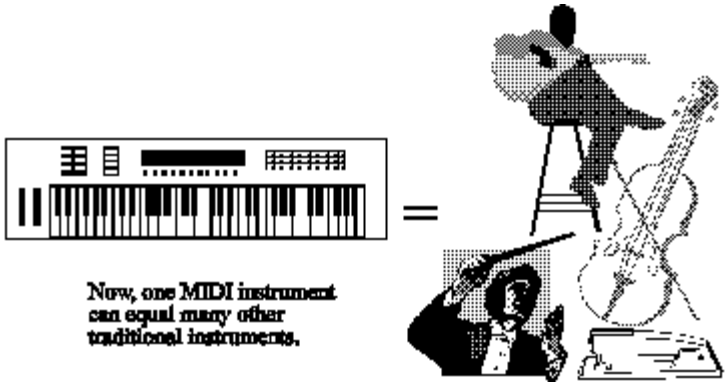


Once MIDI came along, only one button push was necessary to change programs on every single keyboard. Also, playing one of the keyboards would play all the keyboards simultaneously. This presented more problems, but that's covered later. You still need to have all the devices to make the sounds, but they can be located somewhere that's convenient, instead of having to put them all at your fingertips. Also, these other keyboards, now that you're controlling them with MIDI, don't even have to have keyboards! they can just be the actual synthesizer section, bolted into a rack for easy access and movement.



So now we know one reason why MIDI exists. But there are others, too. Another big reason is that, pretty soon, as you're coming up with nifty new sounds for all these synthesizers, you run out of room to store them. No matter how many sounds your keyboard stores, it still stores a finite number. Once you fill every program slot, then what? MIDI offers a way of storing your sounds in a computer, or transferring those sounds to another keyboard just like the one you have. This is useful in situations where there's a keyboard waiting for you somewhere, like a studio, and all you need to take with you are your sounds.

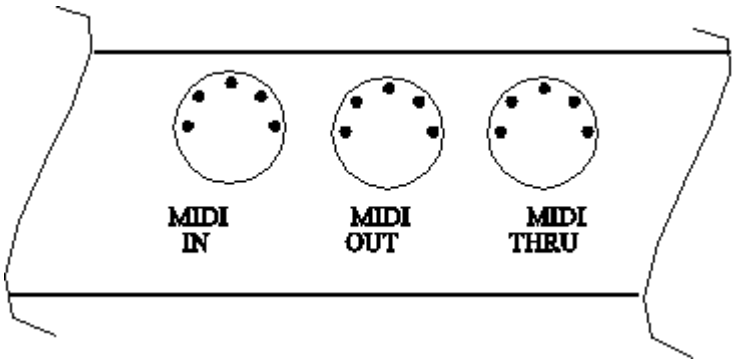
Let's look at one more reason for having MIDI around. Once a player acquires enough talent to fit in a thimble, that player wants to record their performance, either for posterity or for trying to sell their talents. That's easy enough to do if you play only piano, but many keyboard players want to imitate *all* the instruments in an entire band!



That's only possible if you have twenty hands, or if you have a device that will listen to your performance, and play it back precisely as you played it, along with ten of your other performances simultaneously. It's called a sequencer, and it's discussed more in a little bit.

The MIDI Jacks

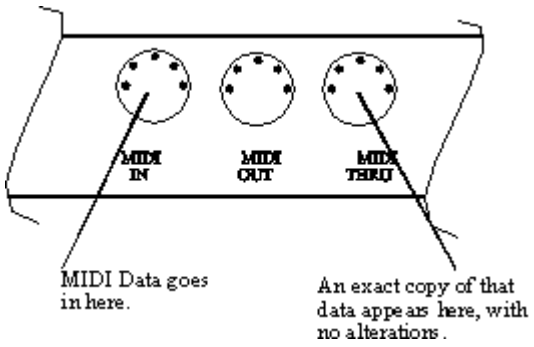
Generally, any device that contains MIDI has three jacks. There are some exceptions, noted below. The three jacks are labelled IN, OUT, and THRU.



When a keyboard produces MIDI data, this data is sent out of the OUT jack. When any device (such as a keyboard) needs to receive MIDI data, the device looks for it at the IN jack.

The Importance of the THRU Jack

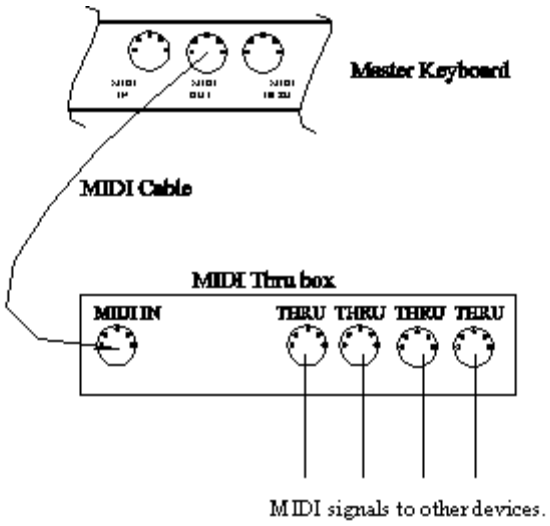
The THRU jack is a little harder to understand. Just think of it as a mirror. Any data that comes into the IN jack is reflected in the mirror, and goes out the THRU jack. This jack is used to send out *the same data* that was received at the IN jack. The THRU jack *does not* contain any data, therefore, that was produced by that unit. So, if you play a note on a keyboard, that data will not appear at the THRU jack.



It's the THRU jack that allows the musician to stack many, even dozens, of keyboards and effects together in a string so that all the units can listen to MIDI data being sent by a master unit.

Did we say effects? That's right, not only keyboards can use MIDI data. Today's effects devices, like reverbs and delays, and even some recording consoles, can make use of MIDI to make certain things happen. Program changes are the most common, since reverbs and delays are likely to have many different settings, all programmed, just like keyboards. These devices have a MIDI IN jack, and probably a MIDI THRU jack, to allow the same data to be passed along to someone else, and someone else, and so on. You might find a MIDI OUT jack to be missing, though. Many of these devices don't produce any data on their own, so they don't need an OUT jack. If you see one, you know that the device can produce its own information, not just listen.

Some early keyboards and other MIDI devices also left out a THRU jack, for some unknown reason. This makes these units a little hard to use, since they can listen to data, but can't pass it along to anything else, but there are ways around that, of course, if the need arises.

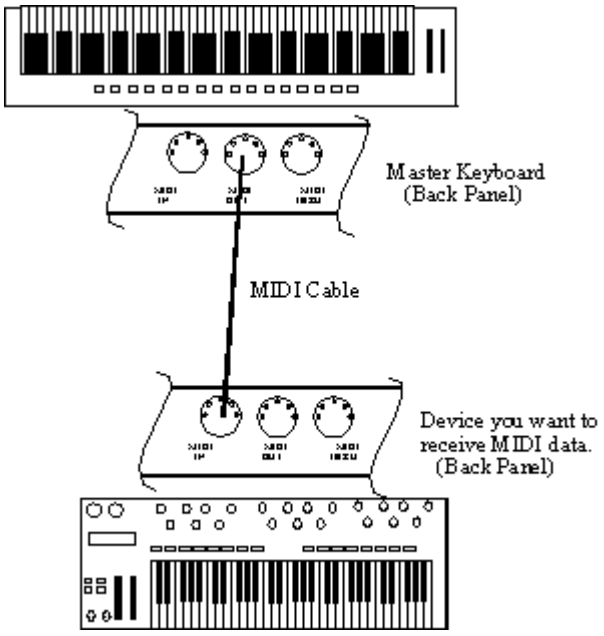


Using a MIDI Thru box to send MIDI signals to many MIDI devices, even if you don't have MIDI Thrus on your equipment.

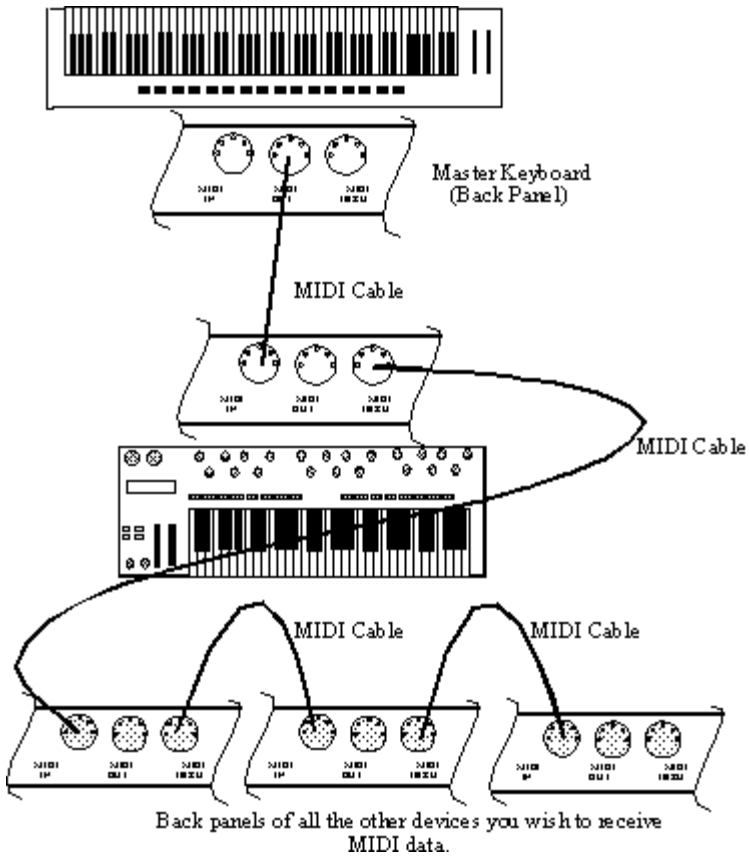
MIDI Connections

Since the three jacks just mentioned aren't connected to anything outside the keyboard in question, we need to connect two or more of the jacks using MIDI cables. These are special cables that have five pins on each end, instead of just one like normal audio cables. Using these special cables helps you remember that MIDI is a data stream, not an audio signal. Any time you connect your system with one or more MIDI cables, you still need to connect all the audio cables too!

As you've probably surmised by reading the previous section, a MIDI OUT needs to be connected with a MIDI cable to another device's MIDI IN jack. The next connection depends on your setup.

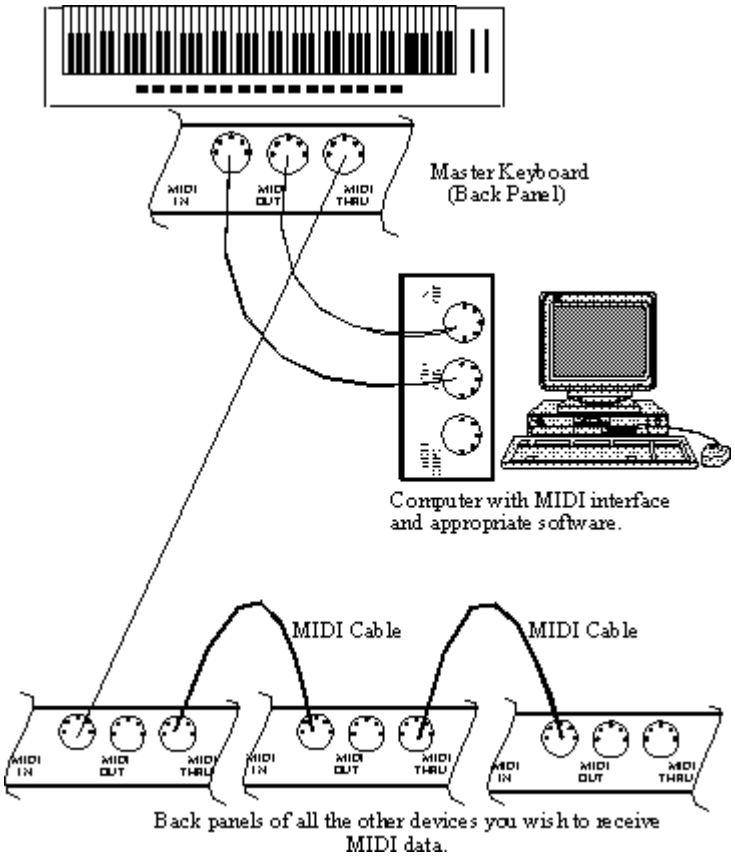


Usually, you're sending several devices the same data, like from a sequencer or master keyboard. In a case like this, hook a cable to the THRU jack of the second unit and the IN jack of the third. Continue until you run out of equipment.

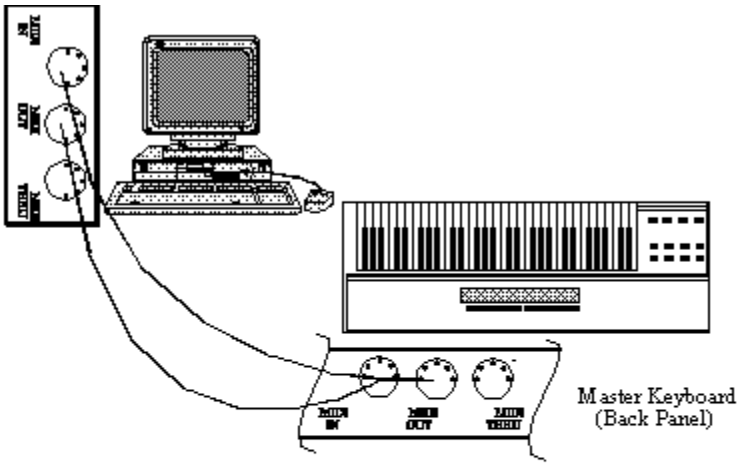


One last connection may be necessary. You may actually have two devices that will be masters. The first would be a sequencer, telling all the keyboards or modules what to play, and the second would be a keyboard, used to record information into the sequencer about the notes you're playing. When this setup is used, connect one last cable from the MIDI OUT jack of the master keyboard to the MIDI IN jack of the sequencer. This allows you to record data into your sequencer from the master keyboard, then send that information to all the other modules from the sequencer, after you've changed it and stored it the way you want.

Also, in this scenario, the very first unit in the chain, as shown in the diagram, is the sequencer. The second is the master keyboard.

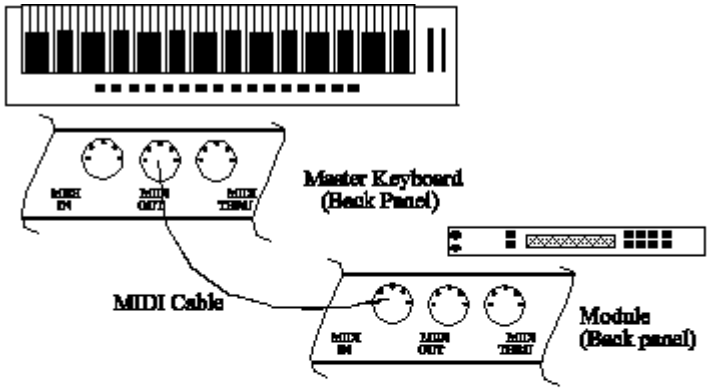


Sample Setup For Simple Sequencing



USES : Composing , recording, practicing. Will play several different parts at once, recording quality is limited by your cassette deck or four-track.
2
WHAT YOU NEED:
1. Computer
2. MIDI Interface for computer
3. Sequencing software for computer
4. Multitimbral synthesizer with keyboard
5. two MIDI Cables
6. Audio system for listening and a recording device.
7. Audio cables for every sound-producing device.

Sample Setup For Playing More Sounds

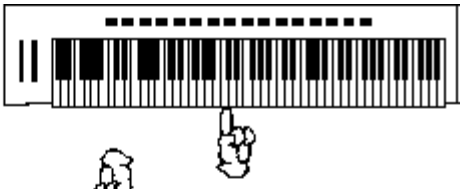


USES: Composing , practicing., playing live. Will play several diffirent parts at once, Mostly suited for playing, not recording.

WHAT YOU NEED:
1. Master keyboard, possibly with a synthesizer inside.
2. At least one synthesizer module.
3. At least one MIDI cable for every device you have other than the keyboard.
4. An audio system for listening.
5. Audio cables for each sound-producing device.

The Five Types of MIDI Data

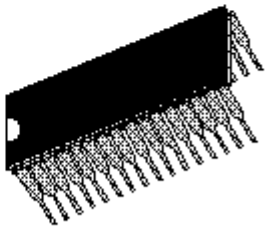
1. Note On and Off Data.



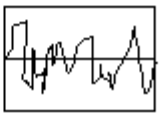
2. Program Change Data.

3. Controller Change Data.

4. System Exclusive Data.



5. Sample and Timing Data.

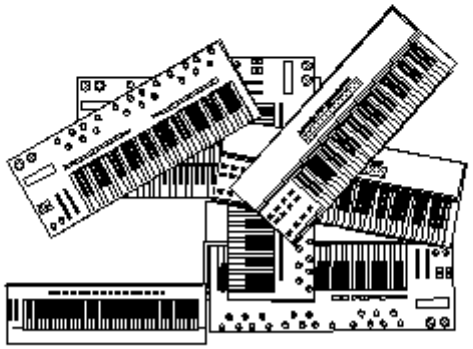


Note Data

Because of the fact that note data is transmitted over MIDI, you no longer have to physically play ten different keyboards at once. Each synthesizer is unique because of the sounds it's capable of, but all the actual keyboards are exactly the same. At least, they should be. Because they're all the same, all but one can be eliminated. Once you find a keyboard you like playing, you can use it to control all the other synthesizers.

Today, because of MIDI, almost every single keyboard synthesizer is also available without a keyboard. Instead of having another huge box to wrestle into the Hyundai, each synthesizer is now called a *module*, and can be bolted into a rack. A very small rack with two or three modules in it weighs about fifteen pounds and is capable of far more than a roomful of gear was ten years ago.

Musical expressiveness today.



The same amount of musical power in 1980!

When you play a note, a signal is sent out the MIDI OUT jack that states "MIDI note #36 ON." (Actually, the specific number depends on which key you press.) Any receiving device knows that this means a certain key has been pushed down. When you let the key up, a message is sent stating "MIDI note #36 OFF." Notice that these two messages are separate events. During the time that the note is actually held down, any receiving device really just assumes that the note is being held down until it receives a note-off message over the MIDI cable.

= Key number 36 ON

= Key number 36 OFF

With this note data information is also sent regarding how hard you've played the key. This data is called Velocity Data. The term velocity is used because of the way this information is calculated. The keyboard doesn't really know how hard, in pounds, you've pressed the key. Instead, it measures how long it took the key to get from the top of its travel to the bottom, and assumes from calculating that velocity how hard you must have hit the key.

We've used the word "assume" twice on this page alone. We all know the disasters that can come about when machines assume the way humans do things, but these particular assumptions really don't lead to any trouble.

Here's another important point: MIDI only communicates the actual key being depressed. MIDI has no way of knowing what the pitch is when that key is played. If the sound called up on your synthesizer module has transposition of some kind on it, the module itself takes care of that. This fact is what makes it possible to alter the key a song is played in and the pitch of the notes (like for tuning or for different octaves) independent of one another in the MIDI data stream.

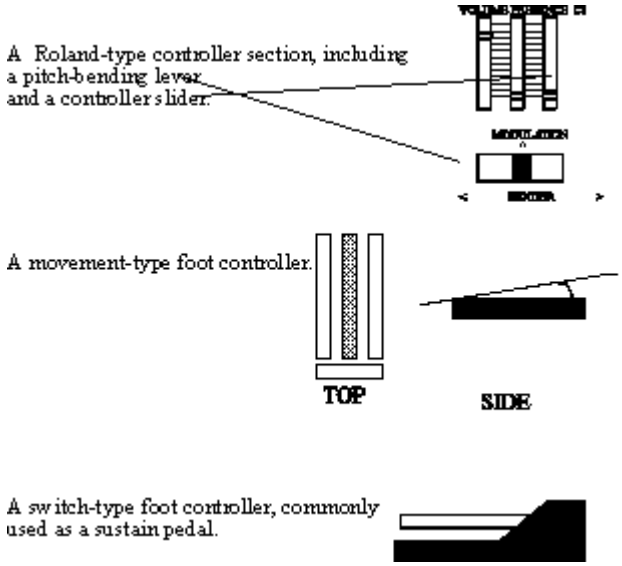
Program Change Data

When you press a button to select a new program on your keyboard, a code corresponding to that particular button is sent over MIDI. MIDI has provision for 128 different programs, numbered 000 through 127. Some manufacturers follow this numbering system on the front panel of the instrument, and some don't. But whatever number appears on your front panel, the correct number is still sent out.

In other words, whether your keyboard's first program is labelled 000, 001, A01, A11, 11, I01, or whatever, MIDI will send out the signal "000" when you push that button. Your keyboard may not have 128 different programs, but that's okay. If it only has 64, it only uses the first 64 numbers for MIDI signals. If your keyboard or module only has, say, 64 programs in it, MIDI will not magically create another 64 of them. The commands for the unused programs will either be ignored, or will "wrap around," which means that selecting program number 65 will produce program number 1 on your module.

Controller Data

Controllers are used to add expressiveness to the keyboard parts you play. The most obvious controllers are the footpedals that probably came with your keyboard, but there are others too.



The idea behind controllers is that a simple keystroke doesn't provide the amount of control over a note that's necessary to make that note musically useful. A violin player gets to use a bow to start a note, but then also gets to use a left-hand finger to introduce vibrato, mute the note, etc. A guitar player has both hands plus a tremolo bar. A lowly keyboard player has to just listen to the note once it's pressed.

But what if that isn't enough? Controllers let you add vibrato, chorusing, volume, and dozens of other changes to a note after you've already pressed the key down.

Common controllers include the pitch and modulation wheels (on the left-hand side of the keyboard), footpedals, footswitches, and even sliders on the front panel of the keyboard.

One last controller is called aftertouch, and it uses a sensor underneath the keyboard to detect how hard you press down after the key is played. It has nothing to do with the key velocity, described earlier. This controller only takes effect once the key has been fully depressed, and then you press down harder. Usually this controller can be assigned to do the same things as any other controller, but the advantage of this particular one is that you can use the same finger or fingers to activate it that you used to press the key in the first place. This leaves all your remaining appendages free to do other things, like move other controllers, make a sandwich, or wave to someone of the opposite sex in the front row.

The amount of use of each of these controllers varies depending on the keyboards being used, and on which instrument you're trying to mimic. Not all devices can support all of the controllers, but there is usually a large choice of options no matter what instrument you have.

MIDI Controllers

In our previous scenario of having ten different keyboards, we would also have to have ten sustain pedals, ten volume pedals (twenty if the keyboards were in stereo), ten pitch bend wheels, and so on. With MIDI, you need to have only one of each of these, usually all on the same keyboard, and those pedals or wheels can control all your other modules over MIDI. Gone are the days of lugging around a suitcase or two full of pedals.

Specific controllers have had numbers assigned to them by the International MIDI Association, the watchdog group in charge of MIDI law.

It’s pointless to memorize this whole list, so look on the last page of your keyboard or module’s owner’s manaul, and you’ll find a list of all the controllers your gear will recognize. It’s included in what’s called the “MIDI Implementation Chart”, and it often looks as though someone drew it by hand.

Using this chart will help you understand which controllers your particular device will output or recognize. As you become more familiar with MIDI, you can use the MIDI Implementation Chart to discern various aspects of what your unit will and won't do with MIDI.

System Exclusive Data

Using System Exclusive data is useful in two ways. If your instrument doesn't have enough room to store all your sounds, you can store them a group at a time with SysEx in a computer.

The SysEx data can also be included at the beginning of a sequence (song comprised of MIDI data) so that all the necessary sounds load automatically at the beginning of a song.

This data contains information about anything that is specific to one synthesizer, effects unit, or what have you. Usually it's a bundle of settings for all the parameters that make up a program, or the entire bundle that makes up all the programs in a particular instrument.

The data is specific, therefore, to the instrument that sends it, or that wishes to receive it. So, this SysEx data has an identifying flag at the beginning of the bundle that every receiving instrument looks at. The flag states the instrument that the data is destined for. All the other instruments don't recognize that flag, so they ignore the data, and are not confused by it.

Other Data

More advanced data applications are also included in MIDI, thoughtfully placed by us in the category of "other data." Although you may not understand all the uses of this data yet, not to worry. Any data you don't need or want sits quietly in the background until you decide you can use it with whatever you're doing.

This data includes MIDI Time Code and Song Position Pointer, which are both synchronization codes designed to let various devices play songs in perfect sync with each other just by connecting a MIDI cable.

The Sample Dump Standard is also embraced in our "other" category. SDS, as it is called, is used to transfer samples from one sampler to another, or to a computer for alteration or storage. If you don't know what a sampler is, don't worry. Not having a sampler will not limit the usefulness of MIDI for you. It's just an add-on to MIDI to make it more useful to more people.

MIDI Organization

Upon reading the previous text, many people will come up with an immediate question: How can I get just one of my sixteen synthesizer modules to respond to a program change? Won't they all respond simultaneously? The answer is no. MIDI provides for sixteen different channels, all going on simultaneously, and all on the same MIDI cable. The most common analogy is that of cable TV. In your home, you have only one cable for the TV, yet you are able to receive many different channels on it at the same tim. The channel selector on your TV set lets you decide which one to watch, and the TV ignores all the rest.

All the note on and off data and the controller data is assigned to one of the sixteen channels by the sending device. Any device that will receive that data must also be set to the same channel. The rest of the data on the other hand, the SysEx, timing information, and SDS, are not channel exclusive. All that data is sent after the channel data, and devices that wish to receive it must be set up to recognize codes, not channels. Interestingly, some manufacturers HAVE decided to include SysEx in the channel information, like Roland, so be sure you read your manual to make sure.

Some instruments, like modern high-dollar synthesizers, can send or receive on many different MIDI channels at once. A certain sound or portion of the keyboard is assigned to each channel, according to the user's needs, and then other modules or keyboards respond to bits and pieces of the data that is sent out. Or, the one keyboard could play many different parts, all with different sounds, because it was set to receive on several channels at once, each containing their own part. This is discussed further in the Sequencing Section.

You Can't Get Something for Nothing

The most common problem when people first start exploring MIDI is that they expect miracles to happen somehow. They expect MIDI to give their ancient keyboard or sound module new capabilities. MIDI is only a means of communication. It's specifically designed so that any information that the receiving device (keyboard, drum machine, or whatever) cannot use is totally ignored.

So, if your keyboard doesn't have aftertouch, pitch bend, or more than ten programs, MIDI won't give it any of these features. MIDI allows you to make the most of the features you have, but it won't give you something your equipment doesn't already possess.

Alternate Controllers

What in the world is an alternate controller? First, a little background. In today's keyboards, the actual keyboard is usually thought of as a separate entity from the sound generating portion, commonly called the synthesizer. So, the keyboard is essentially *controlling* the synthesizer, which makes the keyboard itself a controller.

But some people are uncomfortable playing a keyboard, like guitar players, and MIDI can overcome this hurdle. Many manufacturers make what are called alternate controllers, and they are simply MIDI devices that use something other than a keyboard to produce MIDI information.

A guitar player, equipped with a MIDI guitar controller, can buy rack-mounted synthesizer modules all day long, and be able to play them with the guitar. Other controllers are available too. Violin players now have their own controller, which lets them play a violin (not a regular one, but a special one with a MIDI OUT built into it), which then plays drum machines, synthesizers, and samplers. Accordion players can also revel in the marvels of MIDI, as can saxophone, woodwind, and bass players, and even drummers. In fact, a couple of companies are now making MIDI retrofits for acoustic pianos!

All these players can purchase special versions of their instruments, or in a few cases, have some additions made to the instruments they already own. These new or modified instruments play the same sound sources (modules) as any keyboard player would use, but the variations in technique between the instruments makes for very interesting playing styles that aren't possible for a keyboard player to emulate.

As an example, listen to the synthesizer solo, sounding something like a trumpet, at the end of "Sunset Grill," by Don Henley. That solo was played on guitar. There are many other examples, most of which you may not be able to recognize as being something other than a keyboard unless you were specifically trying to notice it.

Why Would I Want to Sequence?

Every musician has, at one time or another, recorded their performance onto tape. Usually, especially during the formation of your style, you weren't happy with the results. In order to get something that you liked, you had to record it several times.

Once the performance was perfect, it was stored forever for all to hear. But what if you wanted to change something about it later? Most of us have felt that a performance we recorded a couple of years, months, or hours ago could have been made much better. How about using a bell sound instead of that hideous Wurlitzer electric piano sound? Or maybe just a little faster?

If you wanted to change the sound, perhaps you said to yourself, "A different sound would make that piece a lot more emotional, but it was so difficult to play it right, I bet I could do it in a few hours, or a few dozen takes. Oh well, forget it."

With sequencing, which is one of the strongest points of MIDI, you can change the sound you used in a song *without even playing the part again.* If you record a demo for a band or a singer, and the client wants to hear the same song with a different bass line, no problem. You can record over the offending part, or add new ones, without disturbing the rest of the performance it took you hours, or in some cases, weeks, to create. If they want to hear it in a different key, that's easy too. Just the press of one or two buttons, and you can move a song into any key, even one that's difficult or impossible for you to play in.

Speaking of difficulty, how about all those songs you wanted to hear on your nifty MIDI setup that you just can't play? If it's too hard for you to play up to speed, record it slower. Later you can speed the song up *without* affecting the key signature! It's a little like a player piano. The slot that says "Play Middle C" will still say that note no matter how fast the song is pumped through the piano.

If the part is simply impossible for you to play, but you have it on paper or you hear it in your head, you can put it in a sequencer one note at a time, and construct the entire work that way.

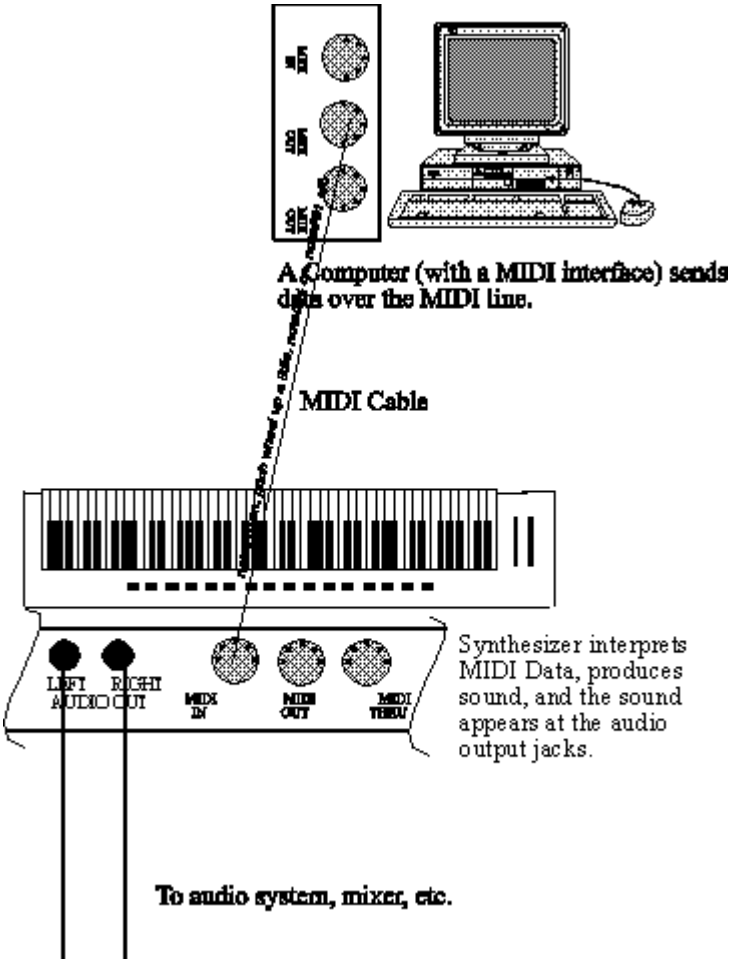
The possibilities are endless. Well, that's pretty cliche. How about "You're limited only by your imagination?" Or maybe "You owe it to yourself to check this out?" The point is, you can concentrate on your performance, making it as good as possible, and worry about other details later. Any song can be altered in any way that makes it more pleasing to you.

Sequencing-What is it?

Sequencing is somewhat similar to recording, but is more advanced in the sense that you can change various aspects of your performance even after you've put it in the sequencer.

The musical performance that you create is really a *sequence* of computer events, not an actual sound recording. In order to hear this performance, you need to set your equipment up and hook it all up to a sound system. You can't listen to a sequenced performance (called simply a sequence) on a cassette deck the way you can a regular recording.

Once again, that's because a sequence contains no audio information. It only contains computer information that sound modules will use to create the audio themselves. Once those modules receive the computer information over MIDI, they produce the actual sound. That sound then goes through your audio system so you can hear it. At that point, when you're hearing it, then you can record it onto tape just as if you were playing the parts live.



What Happens When I Sequence?

As we've seen, whenever you play a note or move a pedal, information is automatically sent out the MIDI jack. Therefore, once you've set up your equipment properly, all you have to do is play normally. Your keyboard translates all your actions into MIDI language, and the sequencer receives it over the MIDI cable.

Once you press a couple of buttons on your sequencer, your performance has been recorded. Usually, only one part is recorded at a time, since that's all most people can play at once. This one part is on one MIDI channel. This channel was set before you ever started playing.

But now, the important part. Remember that only your *performance* is recorded. The music that comes out once the synthesizer or module takes care of its computer housekeeping has *not* been recorded. Your keystrokes and the way you played them are all that's in the sequencer. Now that it's computer data, it can be manipulated just like any other data.

You can change the key of what you've done, change the tempo, or alter just one note in any way you wish. Make it another note, make it shorter, or eliminate it altogether.

One other thing you may do at the beginning of a sequence is select a program. Being part of the MIDI information, this program change command will be sent back to your keyboard when the sequence is played back, causing that keyboard to select that program every single time.

Two important items are worth mentioning here. First, you can put any program change command in at any place or time, even after you've recorded that first one. So, you can experiment with different sounds playing your great chord pattern, without having to play the part manually over and over for every sound, with all the mistakes involved. Admit it. We all make mistakes when we play.

Second, remember that only the command for, say, program number 58 has been sent. The sequencer has absolutely no idea what may be in slot number 58. It only knows that the receiving keyboard should switch to it. So, if you change the sound you had in that slot, that new sound is selected every time you play the sequence. It's not the sound itself that is selected. Only its assigned place. The equipment can't keep up with you when you change part of the equation without telling it.

Continuing the Sequencing

Of course, one part isn't going to make a whole song, unless it's a solo piano piece. Since you can continuously record parts without erasing the first ones you played, it's possible to build an entire symphony of parts, with you playing every single part.

All you do is listen to the first part you recorded, while playing a new part along with it. It's that easy.

Once you've recorded as many parts as you want, they're in the sequencer for you to alter, or just store. Every note you played, every controller you touched, and every program change you've made is changeable. Or, if you prefer, you can leave your performance as is, and store it either in the sequencer's memory or on computer disks, if the sequencer supports them. It certainly supports them if your sequencer happens to be in a computer. Ten years from now, you can load that disk back into the sequencer, and have the exact same perfected performance playing all the latest gear to get a better recording.

Can I Do This Repeatedly?

Aside from the fact that you can sequence for your whole life, the answer to this question is; Only to an Extent. Each instrument or module that you own only plays a certain number of notes simultaneously. This is referred to as *Polyphony*. A guitar has six notes of polyphony, and a trumpet has only one. Today's synthesizers have anywhere from sixteen to thirty-two notes of polyphony.

Once you've recorded so many parts that your module is playing all of its available notes, one of two things must happen. First, you could buy more modules, or second, stop recording parts. If your module tries to play more notes than it is capable of, it will "steal" notes from itself, usually the oldest note being played. The English translation of this is that certain notes will play, and certain notes will cut off, making for a very unnatural sound.

It's evident from previous discussions that some modules are able to play more than one sound at once, say piano and strings. This is referred to as being *multitimbral*. Some modules can produce up to sixteen different sounds at once. If an instrument like this also had sixteen notes of polyphony, then if each sound were playing at the same times, each sound could only have one note playing.

So polyphony and being multitimbral are two different beasts. Polyphony is the maximum simultaneous number of notes available, and multitimbral means you can have more than one sound active at once. These sounds don't have to come from the same key you press on the keyboard. The whole idea behind having a multitimbral instrument is that you can play different parts on different MIDI channels, with each part having a different sound. But, they could all come from the same key if that's what you want.

General MIDI

Speaking of sequencing, a new data format has been presented in the musical community called General MIDI. It makes sequencing easier to keep track of, and it lets you actually buy sequences that someone else recorded, for use on your MIDI equipment.

Buying sequences from someone else is a great learning tool. Pop songs and standards are available, and you can learn volumes about chord structure, harmonization, theory, progressions, and a lot more by simply analyzing the sequences. You can analyze them because, once again, they're only computer data, and you can slow the song down, eliminate parts, transpose to hear the different feels, and on and on. It's easier than buying the sheet music because you can *hear* what's going on. This is especially handy if you're just starting to play or to read music, because it's pretty hard to hear how things flow together if you're having difficulty even playing the parts.

General MIDI is simply a standardization. Buying someone else's sequences isn't much fun if you have to figure out what MIDI channel the drums have been put on, what sounds they want you to hear with which parts, and what parts are supposed to be harmony and which are supposed to be lead.

In General MIDI, the following channel standardizations are suggested:

Channel 01: Piano
Channel 02: Bass
Channel 03: Chord
Channel 04: Melody
Channel 10: Drums

There are other channel assignments, but those give you an idea of what's happening. General MIDI also contains what's called a *Rhythm Map*, which tells which keys on the keyboard play certain drum sounds. It's not too much fun to have your great drum track play the kick drum on every sixteenth note and the snare every eight bars just because you changed drum machines.

Program Changes are also more standardized with General MIDI. Program number 1, for instance, is assigned to always call up your particular module's version of a Grand Piano sound. With standard labels for program slots, you can be assured that when you play back your newly-bought sequence, you are, indeed, supposed to be hearing that part on a Shakuhachi instead of a Laser Gun.

MIDI and You

Don't be afraid of MIDI just because it contains some elements you don't understand yet. It's meant to make life easier for you, not harder. Just wade in a little at a time. The design of MIDI is such that you can just ignore all the aspects you can't make use of at the moment, and concentrate on the music. The music is, after all, the most important thing.

As you grow more familiar with MIDI, you'll find that there are sections of it that you never use. Don't worry about it. Technology is not something to be used simply because it's possible. MIDI won't make you a better player, either. And it won't make you a better composer. Its purpose is to help those ideas that *are* way down deep inside you have a way out, so we can all listen to your music. Have fun, and always ask questions.

If you plan on making a large investment, sit down and figure out what you think you need, and find a salesperson you can trust to help you out. Many people get turned off of MIDI because some shyster conned them into spending five thousand dollars on a huge MIDI rig, without bothering to ask them if that was what they needed. It's pointless to buy a big, fast computer with all the associated software and hardware if you've never used a computer before and you only want to sequence children's songs for your local choir practice. For starters, try talking to the person that sold you this book. They obviously want you to be informed about your decision.