Nanosynth

REFERENCE MANUAL

YOUR SHIPPING CARTON SHOULD CONTAIN THE FOLLOWING ITEMS:

1 NanoSynth
1 AC power adapter
1 Rackmounting screw
1 Alesis warranty card
1 Reference Manual
1 Alesis NanoSynth CD-ROM

If anything is missing, please contact your dealer or Alesis immediately.

PLEASE NOTE: The warranty card is important. Really. Don't just throw it away. We'll be able to take better care of you now, and serve you better in the future, if you fill it out and send it in.

ALESIS CONTACT INFO

Alesis Studio Electronics, Inc.
3630 Holdredge Avenue
Los Angeles, CA 90016

phone: 1-800-5-ALESIS (800-525-3747)
e-mail: alecorp@alesis1.usa.com
website: www.alesis.com

WELCOME!

"Nano" means small. Very, very small.

How small? Well, the official definition of "nano" is precisely one-billionth of whatever unit of measurement you're referring to. So a nanosecond is one billionth of a second, while a nanometer is one-billionth of a meter — a distance so tiny that nanometers are used to measure the distance between adjacent atoms!

This does not mean, however, that a NanoSynth is one billionth of a synthesizer. Here we leave scientific accuracy behind and enter the realm of Cool Marketing Names.

Sure, the NanoSynth is *physically* small (hard to argue with calling something tiny when it only weighs a bit more than a pound, and fits in one-third of a standard rack space). But in terms of musical power, this little box is gigantic. In it you will find...

- 640 programs, 128 of which are user-programmable.
- The best General MIDI set you'll find anywhere.
- 64 voices of polyphony.
- Multitimbral operation.
- Stereo OUTs and INs.
- Full MIDI control.
- A direct serial link for connecting with your computer.
- The same effects processor chip that Alesis uses in their top-of-the-line Q2 multieffects unit.
- A sound ROM with eight megabytes of linear, non-compressed 48kHz samples...

In short, you'll find the equivalent of a complete QS6 keyboard, minus the keyboard, with a few little extras thrown in that make your NanoSynth an especially flexible and useful sound module. There's something great here for you whether you're a professional musician, a multimedia hobbyist, or anything in between. Enjoy!

Connor Freff Cochran
June 1997

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0: WE INTERRUPT THE MANUAL IN PROGRESS FOR SOME STUFF YOU MIGHT NOT FEEL LIKE READING, BUT WHICH HAS TO BE HERE ANYWAY

Important Safety Instructions
Instructions To The User

Many of you — no, let's be honest, most of you — are going to skip over this section.

That's probably okay, assuming you've had prior experience with audio gear and electronic instruments. This is basic stuff that you most likely already know. Feel free to leap to the next section (CONNECTIONS) and begin hooking up and playing your new NanoSynth.

Beginners, however, are strongly advised to read the **Important Safety Instructions**. A little basic knowledge is a good thing.

Important Safety Instructions

WARNING — When using your NanoSynth, certain precautions should always be followed, such as:

- Read all the instructions first.

- Do not use your NanoSynth near water. Why? Water is a terrific conductor of electricity. You risk damaging your NanoSynth and shocking yourself if you use it near things like bathtubs, washbowls, and kitchen sinks, or in wet basements or around swimming pools.

- Your NanoSynth doesn't make any sound by itself — no built-in speakers — but *be careful* when you are setting the volume levels of anything you plug it into. If your amplifier, headphones, or speakers are set too loud, then you could produce sound levels capable of causing permanent hearing loss. That's "permanent" as in "forever," which is definitely not something you want. So be cautious. Don't play your NanoSynth for long periods of time at uncomfortably high volume levels. And if you ever experience any hearing loss or ringing in your ears, consult an audiologist immediately.

- Don't put your NanoSynth on or near any radiators, heat registers, or other strong heat sources.

- The "wall-wart" AC power supply for your NanoSynth should be unplugged from the outlet whenever the unit is going to go unused for a long period of time.

- Be careful that you don't drop things on, or spill liquids into, your NanoSynth. (If you have to drink something while in the vicinity of your NanoSynth, then avoid glasses and soda cans in favor of portable plastic bottles with quick-snap lids, like the kind you'd use when bicycling or at the gym.)

- If for any reason your NanoSynth is damaged, or stops working, don't try to fix it yourself. All repairs should be handled by Alesis-qualified service personnel. If the store where you bought your NanoSynth can't help, contact Alesis directly for the name and number of the authorized service location nearest you.

Instructions To The User

This equipment 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 equipment 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 equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment has been verified to comply with the limits for a class B computing device, pursuant to FCC Rules. In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

1: CONNECTIONS

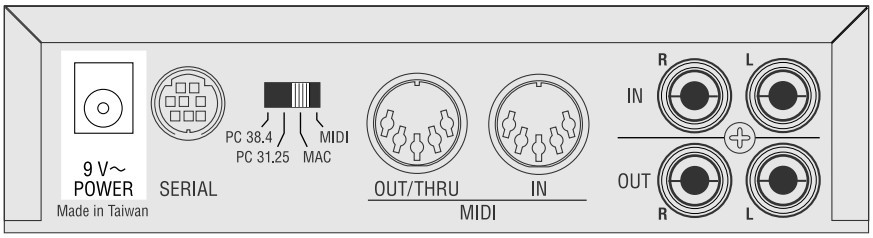
Power
Audio
MIDI
Direct Computer Link (the Serial Port)
Rackmounting

In this section, I'll show you how to put it all together.

TIP: Don't discard your NanoSynth box and packing materials. Instead, tuck them away someplace safe (they won't take up much room). In the unlikely event that you need to return your unit to your dealer or to Alesis for servicing, they'll come in handy.

Power

Included with your NanoSynth is a "wall-wart" style power adapter which is already set for the voltage of the country your unit was shipped to. Connecting it is simple: just insert the prongs on the wall-wart end into an electrical outlet, and the single plug on the adapter end into the 9VAC~ POWER jack on the NanoSynth's back panel.



That's all it takes. Be aware, though, that there is no ON/OFF switch on the NanoSynth. Whenever it is plugged into an active outlet, the unit is on. (To check this, look at the POWER indicator LED on the front panel. It will glow whenever your NanoSynth is getting electricity.)

Leaving your NanoSynth on all the time won't hurt it. You won't use up much electricity, either, since the NanoSynth operates on a miniscule amount of power.

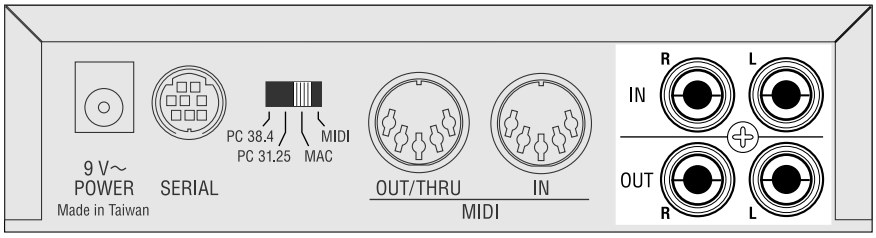
If you'd prefer to turn the unit off when you aren't working with it, instead of leaving it on, there's a simple solution. Plug the unit into a power strip with a built-in ON/OFF switch, and use the power strip switch to turn off the juice when required.

Audio

There are two stereo pairs of RCA audio jacks on the back of the NanoSynth. The upper pair is marked IN and the lower pair is marked OUT. How you will set up for audio, using these jacks, depends on whether you are using your Nanosynth by itself or in combination with your computer's soundcard.

BY ITSELF

If you want to use your NanoSynth as a stand-alone sound module then you can ignore the IN jacks completely. Just run mono audio cables from the LEFT and RIGHT outputs to the corresponding LEFT and RIGHT input jacks on your mixer, amplifier, power amp, or powered speakers.

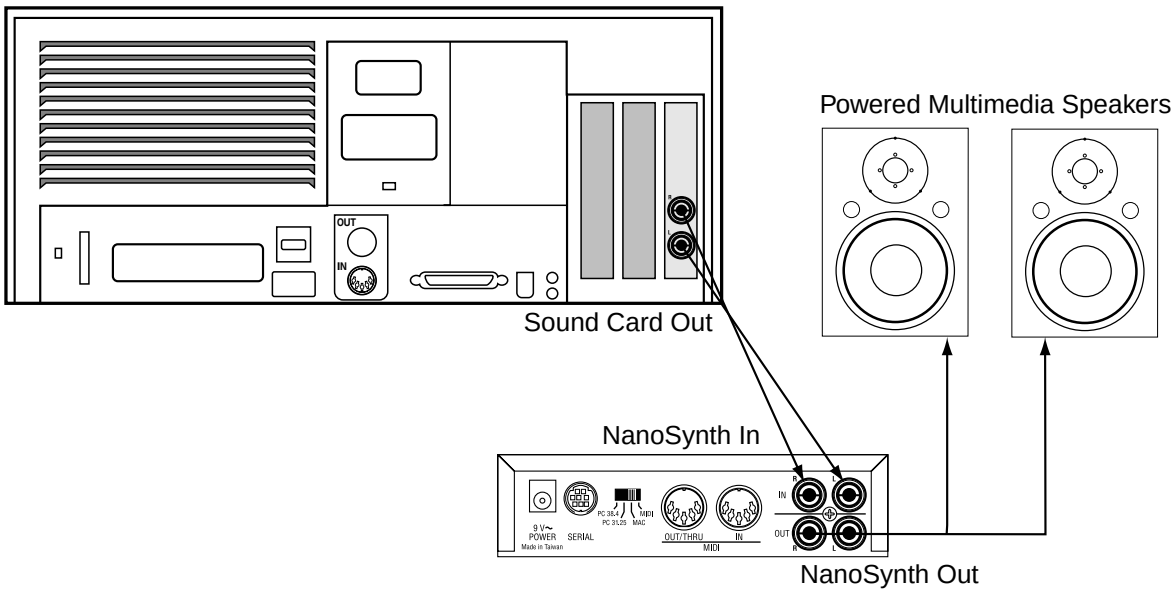


IN COMBINATION WITH A SOUNDCARD

If you want to use your NanoSynth in combination with your computer's soundcard (or some other audio source), you can. The NanoSynth will act as a "mini-mixer" to blend the two sources together. This is particularly good for multimedia applications where you want to use your computer soundcard for all digital audio and the NanoSynth for MIDI files, listening to both through the same set of powered speakers.

It's a simple setup. (1) Connect the LEFT and RIGHT outputs from your computer soundcard, or other audio source, to the NanoSynth's corresponding inputs. (2) Connect the NanoSynth's the LEFT and RIGHT outputs to the corresponding LEFT and RIGHT input jacks on your mixer, amplifier, power amp, or powered speakers.

NOTE: The volume knob on the front of the NanoSynth affects only the NanoSynth itself, and not the volume of whatever signal source is connected to the rear panel inputs.



In a pinch you can get by with hooking up only one of the audio outputs, but I don't recommend it. If you do that you'll be missing out on half the true-stereo sound in each program, not to mention big chunks of stereo reverb and effects. And besides — with all the money you saved buying the NanoSynth in the first place, you really ought to be able to afford some audio cables (preferably good ones).

NOTE: Unlike the NanoPiano and NanoBass, the NanoSynth does not automatically sum its own output signal to mono if only one jack is being used.

AUDIO CABLE TIPS

Here are some things to avoid when working with audio cables. You experienced folks should check these out, too, instead of rushing ahead, because this is an area where you may know less than you think you do. (I can't begin to tell you how many supposedly "professional" musicians and recording engineers I've seen break the following rules, to their very real regret.)

- Do NOT bundle audio cables and AC power cords together. The field from the alternating current in the power cord will leak through even well-shielded cables, inducing noise and distortion in your audio signal.

- Do NOT run audio cables near other sources of obvious electromagnetic interference such as monitors, computers, and power transformers (including the wall-wart end of the NanoSynth's own AC adapter).

- Do NOT run audio cables where they can be stepped on or tripped over. Falling and hurting yourself is an obvious danger, of course. Less obvious is the invisible damage done to the cable itself. Every time you step on a cable you compress the insulation between center conductor and the shield, degrading performance and reducing the cable's reliability. You may not notice a problem right away, but eventually you will.

- Do NOT twist the cable if you can possibly avoid it, or force it to make sharp right angle turns. Doing these things will damage the insides of the cable even faster than stepping on them.

- NEVER unplug a cable by pulling on the cable itself. This puts a dangerous strain on the soldered connections between the cable and the plug, and can easily make a cable go bad (or at least intermittent) on you. The proper way to take a plug out of a jack is the same way you put it in — with a firm grasp on the body of the plug itself.

- ALWAYS keep your plugs and jacks clean and unoxidized. Occasional use of solvent cleaners like Tweek and Cramolin, which are available at any electronics shop, can greatly improve the electrical contact between your connectors.

MIDI

Ten years ago MIDI was still a strange new thing to most musicians and computer users. Not any more, so I'll keep this part short.

The basics: MIDI stands for Musical Instrument Digital Interface, which is a 16-channel serial data exchange and control system for musical devices. MIDI works by supplying a way for the microprocessors in your various electronic musical devices to pass messages back and forth over a special network of cables. These cables, which are used only for MIDI data and nothing else, plug into special five-pin DIN jacks which are typically labeled IN, OUT, and THRU. The IN jack receives MIDI data. The OUT jack transmits it. And the THRU jack automatically echoes and re-transmits whatever data is being received at the IN jack (this last function has a special use I'll get to in a minute).

One of the important things to remember about MIDI is that data flow is strictly one-way. Make sure you always plug the OUT jack of one instrument into the IN jack of another, and vice-versa. The other choices — OUT to OUT, or IN to IN — won't work.

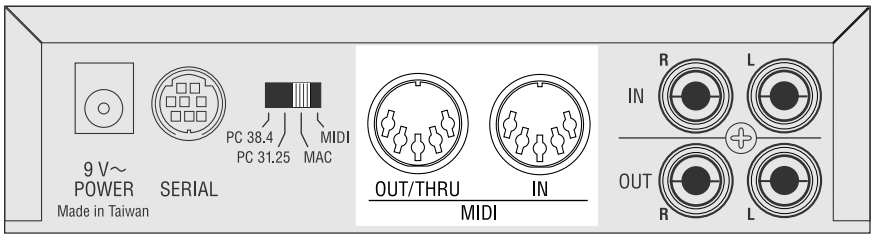
If you'll look on the back of your NanoSynth you'll see that it doesn't have an IN, an OUT, and a THRU. Instead it has an IN and a combined OUT/THRU. There are good reasons for this: (1) The NanoSynth doesn't have a built-in keyboard or anything else to play, so it doesn't really need an OUT jack. (2) Combining OUT and THRU jacks saves a little on the cost, bringing the unit's price down. (3) It makes the back panel less crowded.

NOTE: In order for MIDI to work, the data switch on the NanoSynth's rear panel must be set all the way over to the right (MIDI).

How should you hook your NanoSynth into your MIDI system? That depends on how you intend to use it.

AS A SINGLE SLAVE (the IN Jack)

To play your NanoSynth directly from any MIDI source — keyboard, drum pads, woodwind controller, guitar controller, computer, etc. — just run a MIDI cable from the MIDI OUT of the controlling device to the MIDI IN jack on the back of the NanoSynth.



Because the NanoSynth was designed to be a multitimbral module, it responds to data on all 16 MIDI channels, not just one. For a fuller explanation of this design, and how best to work with it, see

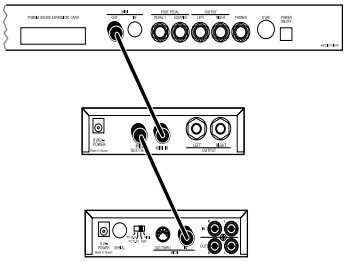
"Getting To All 640 Programs" in Section 3, GET TO KNOW YOUR NANO, and "The Not-So Basics" in Section 4, MIDI RULES.

To make sure the NanoSynth is receiving data, play the controlling instrument while watching the MIDI indicator LED on the NanoSynth's front panel. If everything is set properly, the LED should light up. If you don't see the light, double-check your cable connections and MIDI channel settings.

AS PART OF A DAISY-CHAIN (the OUT Jack, Part 1)

When you want to control several MIDI devices at the same time, there are two ways to do it. The first is to buy a MIDI interface with multiple OUTs, and then run separate MIDI cables from this interface to all the different devices. This is called a "star" network and it is the preferable way to go, if you can afford it.

The second way is to "daisy-chain" several units together.



A daisy-chain is where the OUT/THRU jack on the NanoSynth comes into use. After connecting the controller's OUT to the NanoSynth's IN, you'd continue the chain by running a MIDI cable from the NanoSynth's OUT/THRU to the next instrument's IN jack, then another cable from that instrument's THRU to the next instrument's IN, and so on down the line until you were finished. Now when you play your controller, each device will respond to the MIDI data and "pass it on down" the line.

For reasons which will become clear just a little later in this section, a daisy chain is definitely the way to go if you are using more than one NanoSynth in combination.

PLEASE NOTE: As a general rule of thumb, daisy chains should be no longer than three instruments in a row. Any more than that and you risk accumulating data transmission errors that could cause stuck notes, unexpected program changes, and inaccurate control.

In really big MIDI setups, you might find yourself combining a basic star network with selected short daisy-chains, usually of instruments which you either can't (or don't want to) edit with your computer. Which brings us to...

COMPUTER EDITING
(The OUT Jack, Pt. 2)

127 of the 128 programs in the NanoSynth's User Bank are stored in battery-backed memory, which means that you can use a commercial librarian/editor program (such as Mark of the Unicorn's Unisyn) to customize what's in your NanoSynth. There's a ton of possibilities. You can tweak the factory programs — changing the samples in a program, picking new LFO waveforms, adjusting attack envelopes, radically altering effects settings, and so forth — or create whole new programs from scratch., or just buy a huge library of cool, effective programs for downloading.

To make this work, however, the MIDI link between your NanoSynth and your computer will have to be two-way. This means connecting the MIDI OUT from your computer interface to the MIDI IN of your NanoSynth, and the MIDI OUT of your NanoSynth back to a MIDI IN on your interface.

NOTE: Any program created for Alesis's popular QS6 synthesizer will run in the NanoSynth. This is part of the benefit of using the same sound ROM for both instruments. Please be aware, however, that while the NanoSynth is multitimbral, meaning it can play more than one program at a time, it can't provide each program with a separate effect. Whatever program is set to play over MIDI channel 1 will determine the NanoSynth's effect setting, which any programs being played over other MIDI channels will share. So if you want to use a QS6 patch that has a particularly cool effect setting in your NanoSynth, make sure you set your NanoSynth to play that program on MIDI channel 1.

USING A NANOSYNTH WITH OTHER MIDI DEVICES

Hamlet didn't say it, but I will: "To isolate or not to isolate, that is the question..."

As a single unit connected to a MIDI OUT, without anything else in the chain, your NanoSynth is an easy unit to control. There's nothing to think about: Send it data on any of the 16 available MIDI channels and it will respond.

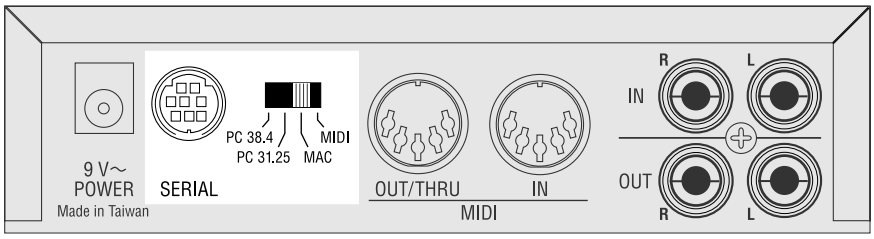
But if you chain your NanoSynth together with anything else, then you need to be aware of the fact that every command you send to the NanoSynth is going to reach every unit in the chain. Here's an example. If you send out a program change on channel 12, for example, then *every* device in the chain that is receiving on channel 12 will switch to the specified program.

This isn't a problem if that's the effect you want to get (such as deliberately stacked-up synth sounds, or synth sounds and effects programs that are set up to switch together). But if it that effect isn't what you want, you're going to have to use a multi-port MIDI interface to keep your devices on separate MIDI lines.

Direct Computer Link (The Serial Port)

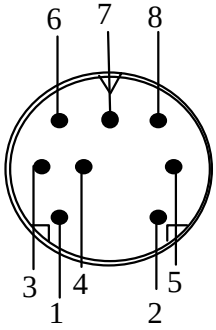
Your NanoSynth can also be controlled directly by your Macintosh or PC computer, using a serial link and special Alesis serial driver software. This software and all necessary setup instructions can be found on the special Alesis CD-ROM that came with your NanoSynth.

In terms of physical connections, just (1) connect the serial port on the NanoSynth to the serial port on your computer, using the correct serial cable for your computer; and (2) set the data switch on the NanoSynth's rear panel to either MAC or PC 38.4, depending on whether you have a Macintosh or a PC. (A very few PCs will require the PC 31.25 setting, but those situations are rare. Try 38.4 first and only switch over if it isn't working.)



NOTE: For historical reasons too lengthy to go into here, serial cable wiring is one of those things which isn't as standardized as non-technical users might like. Some cables are wired straight through, with pin 1 at one end of the cable connecting to pin 1 at the other end, pin 2 to pin 2, and so forth. Others "cross-wire" the pins in various ways. Obviously, using the wrong cable means that direct serial connection won't work, since the signal won't be getting through. Where to get the right cable? You can either buy one direct from Alesis at a reasonable price, or go to your local electronics/computer goodies store and buy a cable with the correct cross-wiring. The following diagram will tell you what to look for.

Alesis Serial Port
wiring diagram



8 pin - mini DIN male plug

This plug connects to the
serial port on the Alesis synth

wiring for PC serial 9pin D-sub

Alesis synth 8pin mini DIN male	PC Serial 9pin D-sub female
1	8
2	7
3	2
4	5
5	3

wiring for PC serial 25pin D-sub

Alesis synth 8pin mini DIN male	PC Serial 25pin D-sub female
1	5
2	4
3	3
4	7
5	2

wiring for Mac serial port

Alesis synth 8pin mini DIN male	Mac Serial 8pin mini DIN male
1	2
2	1
3	5
4	4
5	3
6	8
7	7
8	6

Rackmounting

Your NanoSynth will sit happily on any flat surface, and thanks to its four rubber feet it won't slide around too much. But if you are interested in a more secure and permanent installation, then rackmounting is the way to go.

On the underside of your unit you will find a mounting nut already built into the box. This nut is positioned so it will line up with the hole in most standard rack-mount adapters for one-third-rack sized products. Simply place the NanoSynth on the adapter tray, line up the mounting nut with the hole in the adapter, and screw the unit into place using the mounting screw that came with your NanoSynth at purchase.

Your local music store can certainly supply you with an adapter that will work to mount your NanoSynth into a rack. Ask for a single-space rack shelf, rack tray, or universal rack adapter, and make sure it has pre-drilled holes in the bottom that match up with the NanoSynth's mounting nut.

2: INSTANT FUN

Once you're set up, this section will show you the two quickest ways to explore the programs in your NanoSynth.

Demo Sequence

Built into your NanoSynth is a musical demo written and played by Herb Jimmerson. No single demo could show off all 640 programs in the NanoSynth, but Herb's "movie score" music makes a good start.

To run the demo:

- Make sure your audio is hooked up and the power on.
- Set the CHANNEL, CATEGORY, and PROGRAM knobs straight up, to the "twelve o'clock" position.
- Set the EFFECTS knob all the way counter-clockwise. Then...
- Turn EFFECTS all the way to the right in one quick turn.

At this point the MIDI indicator LED will turn on, and you will hear the Herb's piece begin to play. (The reason the indicator light is flashing is because the demo is playing from MIDI data stored in the NanoSynth ROM.)

To shut the demo off, either turn the EFFECTS knob all the way to the left again in one quick turn, or turn the unit's power off.

Playing It Yourself

That's what you bought it for, isn't it?

Go right ahead, then. Double-check all the necessary connections — power, audio, MIDI — and start playing! When you get tired of a particular program, just use the CATEGORY and PROGRAM knobs to shift to something new (256 of the unit's 640 programs are available from the front panel).

Getting To All 640 Programs

The NanoSynth comes with 640 programs. 256 of these (including the 127 that are user-programmable, and the special "blank" program) can be called up from the front panel. The other 384 can only be called up via MIDI or serial link.

Here's how it works.

FROM THE FRONT PANEL (GENERAL MIDI & USER BANKS)

The 256 programs available from the front panel consist of two 128-program banks: General MIDI and User.

Because General MIDI specifies sounds in groups of 8, we've arranged things as follows. For each of the 16 positions on the CATEGORY knob, positions 1-8 on the PROGRAM knob are programs from the General MIDI Bank, while positions 9-16 are programs from the User Bank.

In other words, only the PROGRAM knob determines which of the two available Banks you are in, while the CATEGORY knob is used to select what grouping of 16 programs (eight from each bank) is immediately accessible.

NOTE: If you are using either a NanoBass or a NanoPiano alongside your NanoSynth, be aware that front panel program selection works differently on those units. Because they are not General MIDI, it wasn't necessary to split banks across the 16 choices on the PROGRAM knob. Instead, banks are split across the CATEGORY knob. Each position of that knob represents 16 related programs in the same bank, so that all of Bank 0 is represented by CATEGORY positions 1-8, and all of Bank 1 is represented by CATEGORY positions 9-16.

VIA MIDI OR SERIAL LINK (SAME + BANKS 1, 2, AND 3)

The best way to have complete control over your NanoSynth, of course, is to ignore the CHANNEL, CATEGORY, and PROGRAM knobs entirely, and run everything using Bank Select and Program Change commands. That way you can access any of the unit's 640 programs, on any channel, at any time, without undue muss, fuss, or bother.

There are three different ways to do this.

1) Always send a Bank Select command and then a Program Change command, in sequence. This guarantees that you will always get the exact program you want, so it's probably a good habit to get into.

2) Send only a Program Change command. This will change the current program without changing the bank you are in. (For example, if you are in Bank 0, Program 33, and send a Program Change 76 command, your NanoSynth will play Bank 0, Program 76.)

3) Send only a Bank Select command. This will change the current bank *and* the current program — but it will be whatever program in the new bank has the same MIDI program number as the old one. (For example, if you are in Bank 0, Program 33, and send a Bank Select 1 command, your NanoSynth will play Bank 1, Program 33.)

MIXING FRONT PANEL AND MIDI/SERIAL OPERATION

The rule to remember is a straightforward one: Whatever you *just did* is what counts.

Here's are two examples which should make this principle clear.

- Using your computer, you send your NanoSynth commands which activate Bank 2, Program on MIDI channel 5. So that's what plays on that channel, even if the front panel is set differently.

- If you now turn either the CATEGORY or the PROGRAM knobs, your NanoSynth will instantly change to match the Bank, Program, and MIDI selections shown on the front panel. Partial changes aren't possible — you can't call up a program in Banks 2, 3, or 4, and then use the front panel controls to move around in those banks. Move the knobs at all, and you'll be back in either the General MIDI or User banks.

3: GET TO KNOW YOUR NANO

The Specs
The Front
The Back
The Programs
The ROM Sounds

In this section I'll quickly step you through the basic features, specs, and controls of the NanoSynth. You'll also find a reference section listing all 462 sounds in the on-board ROM and all 640 programs (with room to take some notes of your own).

The Specs

Sound Generation Method: sample playback 16 bit Linear 48kHz Sample ROM

Synthesis: QS Composite Synthesis™

Voices: 64 (dynamically-allocated), each with sweepable lowpass filter, 3 envelope generators, 3 LFOs, programmable effects send and QS Modulation Matrix

Available Waveform Memory: 8 Megabytes

Program Memory: 640 presets (513 preset, 127 user)

Effects: QS Parallel Matrix Effects™ (4 independent stereo multieffect processing busses)

Multitimbral Setup: QS Mix Mode

MIDI Connections: MIDI In, MIDI Out/Thru

Computer Data Connection: Switchable Serial Port (Macintosh 1 megahertz clock, PC 31.25 kbaud, PC 38.4 kbaud)

Audio Outputs: Stereo Left and Right inputs, stereo Left and Right outputs

Power Requirements: 9 VAC, 5 Volt Amps external Transformer, UL and CSA Approved

Dimensions: (WxHxD) 5.5" x 1.5" x 4.5"

Weight: 1.25 lbs.

What They Mean When They Say "64 Voices"

Once upon a time it was simple. A "voice," in synth parlance, meant a single note of polyphony. A five voice instrument like the Sequential Circuits Prophet 5™ could play five simultaneous notes. A 16 voice instrument like the Yamaha DX7™ could play 16 notes. And so on.

Then things got complicated, when synth programmers got deep into digital design and figured out how to create even more complicated and interesting sonic textures by stacking voices together in combination. Suddenly the "number of voices = polyphony" equation didn't directly apply anymore.

In one program on an instrument, for example, playing a single key might trigger a flute voice and a choir voice simultaneously: one note, two voices. Another program in the same instrument might stack another two voices into the mix: one note, four voices. If such an instrument had 16 voices to start with, playing just four notes would max it out.

It's important for you to understand that interaction.

The NanoSynth is a 64-voice instrument. Some of its programs trigger only one voice per note played. With those programs, you'll have 64 notes of available polyphony. Other programs trigger two voices per note, giving you 32 voices of available polyphony. Still others trigger four voices per note, allowing you 16 notes of polyphony.

And that's just for a single program. Since the NanoSynth is multitimbral and responds to all 16 MIDI channels at the same time, it's possible (though not terribly likely) that you could send assign a "4-voice-per-note" program to each of the instrument's 16 channels, then send a single note on each of those channels...and simultaneously trigger all 64 available voices, maxing out the NanoSynth's sound engine.

This all sounds more daunting than it actually is, though, thanks to another item you'll find back there in the specs: Dynamic Allocation. In simplest terms, dynamic allocation is a very slick, very smart bit of software that keeps track of what you are playing and invisibly "steals" voices that are already sounding, in order to keep up as you play.

In a well-programmed instrument, dynamic allocation is so transparent a process you'll rarely notice it happening, even in multitimbral operation. And the NanoSynth is a *very* well-programmed instrument.

What's Special About User Bank Program 127

So what if you *don't* want your NanoSynth to respond to all 16 MIDI channels? What if you want it to merrily play along only on channel 1, or maybe just channels 1, 3, and 14?

You cheat, that's what you do.

The NanoSynth responds to all 16 channels, all the time. You can't turn any of them off. But you can get the NanoSynth to *act* as if a particular channel is off by assigning User Bank Program 127 to it. Why? Because User Bank Program 127 is blank. Empty. Void. There just isn't anything there for the incoming data to play, so if you assign User bank 127 to a particular MIDI channel you will get blissful silence on that channel until you shift to another program.

NOTE: This is so useful that User Bank Program 127 has been hardwired permanently into the NanoSynth. Even though it is officially in the "User" Bank, this program can't be deleted, edited, overwritten, or changed in any way. (You'll notice this if you download a whole new bank from your computer. Only programs 0-126 will change.)

The Front

The front of the NanoSynth has two indicator LEDs and five knobs. Taking them from left to right...

POWER: This indicator will glow whenever the NanoSynth is hooked up to a live electrical outlet.

MIDI: This indicator will flash whenever the NanoSynth is receiving MIDI data. (You'll notice that it lights up when the unit is playing its onboard demo sequence. That's because the demo is stored in memory as MIDI data, and .)

VOLUME: This knob controls the stereo output volume for the instrument. All the way to the left is off. All the way to the right is full on. For maximum audio quality I recommend turning the volume knob to full on, and lowering the NanoSynth's signal to proper levels at your mixer or amp input. This control affects only the NanoSynth's output. It doesn't alter the output level of any signals coming in through the NanoSynth's rear panel input jacks. (Unlike the EFFECT, CATEGORY, and PROGRAM knobs, the VOLUME knob does not control each channel independently. It controls the volume of the entire unit. To adjust volume on a per-channel basis, use MIDI Continuous Controller #7.)

EFFECT: Although many NanoSynth programs have more than one effect built into them, each program has one *specific* effect that can be adjusted in real time from this knob. Turning it all the way to the left lowers the specified effect to nothing, while turning it all the way to the right takes the effect to its maximum programmed level. (The other effects in any given program are also adjustable, but only via MIDI.)

CHANNEL: Since the NanoSynth is fully multitimbral and responds on all 16 MIDI channels, this knob does *not* select which channel the unit will respond to. What it does, instead, is select which channel to assign a program to when working from the front panel (program selection itself is done by turning the CATEGORY and PROGRAM knobs). Just spinning this dial doesn't automatically alter anything — a good thing, since otherwise you couldn't set a program and make it stick. To actually assign programs is a two-step process. (1) Select a MIDI channel. (2) Set a new program for that channel using either the CATEGORY knob, the PROGRAM knob, or both. When you move on, using the MIDI knob, the last selected program for the previous channel is saved in battery-backed memory.

CATEGORY: This knob has no printed name on the front panel — there wasn't room — but its function should be rapidly apparent once you start playing around with it. The 256 programs in the NanoSynth that are available from the front panel are organized in two banks, General MIDI and User, and each of these banks is sub-organized in 16 categories of 8 programs each. This knob is what you use to select from among the 16 categories.

PROGRAM: You'll turn this one a lot (assuming you use the front panel at all). Positions 1-8 represent programs from the General MIDI bank for the currently selected category, while positions 9-16 represent the same category's programs in the User bank.

The Back

The back of the NanoSynth has one control switch and eight connectors — one for power, one for direct computer serial link, two for MIDI, and four for audio.

POWER: This jack supplies electricity to the NanoSynth through the 9-volt AC adapter supplied by Alesis.

SERIAL DATA: This is a standard DIN-8 serial connector. If you wish to control your NanoSynth directly from your PC or Macintosh, skipping MIDI entirely, this is where you'd connect a cable running to your computer's serial port.

DATA SWITCH: This throw-switch determines whether the NanoSynth will respond to MIDI messages or direct serial data (and if the latter, from what kind of computer). It has four settings: PC 38.4, PC 31.25, MAC, and MIDI. People planning on using MIDI only should set this switch to MIDI and leave it there. Macintosh users wanting direct control should select MAC. PC users wanting direct control should start out with PC 38.4, and only try PC 31.25 in the (very rare) instances in which the faster setting does not work.

MIDI OUT/THRU: The only original MIDI messages sent out by this 5-pin DIN jack are certain responses to commands from an external source (sequencer, editor/librarian, etc.). At all other times what it does is automatically echo and re-transmit any MIDI data entering through the MIDI IN jack.

MIDI IN: This 5-pin DIN jack receives incoming MIDI data from external sources and controllers.

AUDIO IN LEFT/RIGHT: This stereo pair of RCA inputs is what you would use to connect another sound source, such as a computer soundcard's outputs, into your NanoSynth. The signal entering these inputs is routed directly out the rear panel output jacks, without processing of any kind. The main purpose of these connectors is to allow for easy setup in a multimedia environment. You can plug your soundcard into your NanoSynth, then plug your NanoSynth into your computer's powered speakers, and hear both the NanoSynth and your soundcard without any further need for connectors, adapters, or submixing.

AUDIO OUT LEFT/RIGHT: This stereo pair of RCA jacks serves as the output connectors for the NanoSynth itself, mixed with whatever signal is entering through the rear panel input jacks. (The volume knob on the front panel affects only the NanoSynth's portion of this combined signal.)

The Programs

On the following pages you will find reference charts for all 640 NanoSynth programs, organized by category. The chart shows the MIDI bank select command and MIDI program number for each program, its number on the front panel PROGRAM knob, and its name.

There is also a space for you to write in notes of your own regarding what you think of each sound, or any ideas you might have for using it.

NanoSynth Program List

MIDI program Category/# (Only the GM and User bank may be selected via the front panel The associated controller 0 value is listed next to the bank)

change #

Prog#		GM Bank(0)	User Bank(1)		Preset 2(2)		Preset 3(3)		Preset 4(4)
		Piano							
000	1	Piano 1	9	8va Piano	0	Solo Piano	0	ClasclGrnd	0	GrandPiano
001	2	Piano 2	10	PianoMorph	1	HousePiano	1	HyperPiano	1	DancePiano
002	3	Elec Grand	11	Whirl Lee	2	Electratak	2	Syn Piano	2	EGrd & Pad
003	4	Honky-Tonk	12	Player Pno	3	SalloonKey	3	Balladeer	3	DirtyWurly
004	5	E.Piano 1	13	61 Tines	4	Suitcase	4	Nice Tines	4	Mars E Pno
005	6	E.Piano 2	14	Rayz Roadz	5	Hard Roads	5	Smooth EP	5	SuperRoadz
006	7	Harpschrd	15	8'4'Harpsi	6	TrueHarpsi	6	Octachord	6	Ana Harpsi
007	8	Clav	16	Clavitube	7	Clavislap	7	ProfitClav	7	Digi Clav
		Chromatic							
008	1	Celeste	9	Potsticker	8	ShortCeles	8	FairyBellz	8	Chiff Bell
009	2	Glockenspl	10	AlloyGlock	9	Gloknspark	9	GlassBells	9	Tambigloxx
010	3	Music Box	11	Charms	10	SweetBells	10	Clear Bell	10	Basic Bell
011	4	Vibes	12	Mad Vibes	11	Cool Vibes	11	Vibraphone	11	MorphBells
012	5	Marimba	13	BasMarimba	12	MarmbaIsle	12	Wood Sign	12	Bellarimba
013	6	Xylophone	14	Xylobrite	13	Woody Xylo	13	Steelophon	13	Brake Drum
014	7	TubularBel	15	ClockTower	14	Tubulous	14	Tubularis	14	Watercan
015	8	Santur	16	Britecimmr	15	HamrDulcmr	15	Dulcioto	15	Lunk Harp
		Organ							
016	1	Organ 1	9	LFO Lezly	16	PrcsvBlues	16	DrawbarCtl	16	ShadeOpale
017	2	Organ 2	10	Survival B	17	Vacuum B	17	MW Organ	17	Eng Organ
018	3	Organ 3	11	High Life	18	BigBadPerc	18	ToneWhlPrc	18	BlueZorgan
019	4	ChurchOrgn	12	Full Ranks	19	ChurchPipe	19	BritePipes	19	SftPipeOrg
020	5	Reed Organ	13	Gothic Org	20	Reed Stops	20	DigiPump	20	MellowPump
021	6	Accordian	14	ClrAcrdion	21	FrAccrdion	21	WrmAcrdion	21	One Accord
022	7	Harmonica	15	WhammerJmr	22	PocketHarp	22	F-harmonca	22	BzzHarmnca
023	8	Bandoneon	16	Palermo	23	AhOneAnna2	23	DarkHrmnca	23	SynAccrdn
		Guitar							
024	1	Nylon Gtr	9	ClassiclAx	24	ThickNylon	24	Flamenco 6	24	Nylon&Oohs
025	2	Steel Gtr	10	SteelUrslf	25	DoublSteel	25	Acous6Strg	25	FolkBarGtr
026	3	Jazz Gtr	11	PedalSteel	26	PassGuitar	26	HawaiianGt	26	GuitarPoem
027	4	Clean Gtr	12	818 Guitar	27	PulpGuitar	27	CountryGtr	27	Royal Coil
028	5	Mute Gtr	13	Chunky	28	Funky Mute	28	Total Chug	28	TreMellow
029	6	Overdrive	14	Rock Drive	29	OvrdriveGt	29	TurboCtrlC	29	CoralLezli
030	7	Distortion	15	Feedbacker	30	Rock Lead	30	DistortdGt	30	HeroHarmnx
031	8	Gt.Harmnix	16	DstHrmonic	31	ElHarmonic	31	AcHarmonic	31	Strummers
		Bass							
032	1	AcousBass	9	BigUpright	32	AcousBassV	32	FatUpright	32	ArndsHouse
033	2	FingerBass	10	Sure Bass	33	Deep Bass	33	Face Bass	33	Octaver
034	3	PickedBass	11	Heavy Bass	34	Mu Bass	34	SharpStick	34	007 Bass
035	4	Fretless	12	No Frets!	35	VolumeKnob	35	SmoothNeck	35	Fretlissyn

036	5	Slap Bass1	13	Slapstick	36	FlaminBass	36	Popless	36	Dist Bass
037	6	Slap Bass2	14	Slap It!	37	GothamBass	37	Pop'n Bass	37	Slappers
038	7	Syn.Bass 1	15	Funky Acid	38	Filter Wow	38	LatelyBass	38	Dee X Bass
039	8	Syn.Bass 2	16	Fat Mini	39	Hypno Bass	39	TranceBass	39	PsychoBass
		Strings								
040	1	Violin	9	Stradivari	40	DiamondVln	40	Violiner	40	Fusion Vln
041	2	Viola	10	BiViola	41	Solo Viola	41	C-Bs&Viola	41	Fusion Vla
042	3	Cello	11	Cello Ros	42	DarkrCello	42	CelloRound	42	Dark Cello
043	4	Contrabass	12	FusinKntra	43	Bass&Cello	43	Celli	43	Kontrabass
044	5	TremoloStr	13	TremEnsemb	44	TrembleStr	44	StringAura	44	J Str Trem
045	6	Pizzicato	14	Pizzicati	45	PizzViolin	45	Pizz Pluck	45	SpacePluck
046	7	Harp	15	HeavenHarp	46	Soft Harp	46	Harpitz	46	Waterfalls
047	8	Timpani	16	TimPanic	47	Big O Timp	47	TrashyTimp	47	Strng&Timp
		Ensemble								
048	1	Strings	9	HugeString	48	ArcoStrngs	48	Concerto	48	OctoString
049	2	Slo String	10	SloOctStrg	49	String Pad	49	Slow 8s	49	Orchestrar
050	3	SynString1	11	SE Motion	50	J Strings	50	AnaStrEnsm	50	VintageStr
051	4	SynString2	12	Xpando Pad	51	Ana String	51	Syn Arcos	51	Obersphere
052	5	Choir Aahs	13	CloudChoir	52	Ooh LaLa	52	MorphChoir	52	Afterglow
053	6	Ooh Vox	14	VelOoz&Aaz	53	Chiff Oohs	53	Hen-Ya	53	Sunsrizer
054	7	Synvox	15	Nice Voice	54	Velocivox	54	Air Choir	54	GlideVoxMW
055	8	Orchst.Hit	16	Hitz Peak	55	Mortal Hit	55	Danz Hitz	55	Deja Hitz
		Brass								
056	1	Trumpet	9	UseMWandAT	56	TrumpetLyt	56	SynTrumpet	56	TrumpletMW
057	2	Trombone	10	Bone Tone	57	Solo Tromb	57	Tromb Ens	57	Fanfare
058	3	Tuba	11	Hard Tuba	58	Big Tuba	58	Round Tuba	58	ClsclHorns
059	4	Mute Trump	12	BriteMute	59	Jazz Mute	59	Orch Mutes	59	Mute&Flute
060	5	FrenchHorn	13	FlugelSolo	60	FHrn Ens	60	HornExpans	60	Documentar
061	6	Brass	14	EssexBrass	61	BrassTouch	61	Stab Brass	61	BriteBrass
062	7	Syn.Brass1	15	Matrix Brs	62	Sfz Brass	62	Mighty5ths	62	BeBopHorns
063	8	Syn.Brass2	16	El Brasso	63	FiltrSynth	63	Ooh Horns	63	Kick Brass
		Reed								
064	1	SopranoSax	9	G. Soprano	64	Saxette	64	MonoSoprno	64	Pastorale
065	2	Alto Sax	10	Sax Touch	65	Spit Alto	65	Alto Swing	65	Sexy Sax
066	3	Tenor Sax	11	Tenor Solo	66	BreathySax	66	Throat Sax	66	Sax on Wax
067	4	Bari Sax	12	SaxSection	67	Big O Bari	67	Sam's Sax	67	ThoseSaxes
068	5	Oboe	13	Oboe Reed	68	Oboe Blow	68	Ebony Oboe	68	Wind Ensmb
069	6	EnglishHrn	14	S.Eng.Horn	69	London Fog	69	StatelyOrc	69	Orchestr8
070	7	Bassoon	15	DrkBassoon	70	SoloBasoon	70	Fhorn&Bssn	70	Oddsemble
071	8	Clarinet	16	Clarinet O	71	1stClarnet	71	Dixi Brass	71	Cartoonin'
		Pipe								
072	1	Piccolo	9	Pickle O	72	Pick-a-low	72	Pic-a-fife	72	TronFlutes
073	2	Flute	10	LyricFlute	73	MoodyFlute	73	Deep Flute	73	ChiffFlute
074	3	Recorder	11	SprnoRcrdr	74	SftRecordr	74	SingleFlut	74	The Bosun
075	4	Pan Flute	12	PanPeople	75	Panz Flute	75	Hard Pipes	75	Shamanixst
076	5	BottleBlow	13	PlugdBottl	76	BottledAir	76	Bottle Pad	76	BlowDeTune
077	6	Shakuhachi	14	Octohachi	77	Phat Pipe	77	NativeFlut	77	FluteEnsem
078	7	Whistle	15	KeyWhistlr	78	Whistral	78	Wistelaan	78	Nautical
079	8	Ocarina	16	Rugrats	79	OcariNoir	79	Slippery	79	PanBristle

		Synth Lead								
080	1	SquareWave	9	Porta Lead	80	SquareLead	80	RaveSqrQS6	80	3oh3 SqrMW
081	2	Saw Wave	10	Quadratix	81	Saw Lead	81	RaveSawQS6	81	3oh3 SawMW
082	3	Calliope	11	Triangular	82	SynCalliop	82	Syn Circus	82	Digidee
083	4	Chiffer Ld	12	Rez Blastz	83	Zip Lead	83	Analogist	83	ChiffLeads
084	5	Charang	13	Screamer	84	Boiled Gtr	84	Haurang	84	FatAnaLead
085	6	Solo Voice	14	ShineOn...	85	Solo Vocks	85	Voice Lead	85	Applewine
086	7	5th Saw	15	Saw 5X	86	King 5th	86	Brassy 5th	86	I Saw 5
087	8	Bass&Lead	16	ClassicSqr	87	Low&High	87	Led Bass	87	Blacksmith
		Synth Pad								
088	1	Fantasia	9	Bell Pad	88	Marimpanad	88	Pluck Pad	88	Gothos
089	2	Warm Pad	10	Atlantis	89	Cool Pad	89	Swell Pad	89	Holla Pad
090	3	Polysynth	11	PolySyn	90	Poly-gone	90	Air Pad MW	90	Digiculver
091	4	SpaceVoice	12	SpaceVocks	91	BrezyChoir	91	Voice Bell	91	Scarlette
092	5	BowedGlass	13	Ice-O-tope	92	Bo's Glass	92	Tranzcndnt	92	SftScience
093	6	Metal Pad	14	Metallic	93	Tal Pad	93	BladeRunnr	93	Illusions
094	7	Halo Pad	15	HiloVolt	94	Holo Pad	94	Hilo Pad	94	VoltagePad
095	8	Sweep Pad	16	7th Wave	95	Sweep Up	95	E Sweep	95	Ascent
		Synth FX								
096	1	Ice Rain	9	HeavenCent	96	Comet Rain	96	Acid Rain	96	Dew Drops
097	2	Soundtrack	10	Bali Hai	97	SuperScore	97	Legendary	97	Ocean Mood
098	3	Crystal	11	Crystallin	98	Aluminum	98	Strukit	98	Helical
099	4	Atmosphere	12	Tropospher	99	Atmosfear	99	Strafing	99	PhaseArray
100	5	Brightness	13	CafeDelMar	100	Brighter	100	GldnFleece	100	Romulux
101	6	Goblins	14	Gobbling	101	Elves	101	Nitrous	101	Hyperspace
102	7	Echo Drops	15	Echoes	102	EffectRetn	102	HighGlissz	102	Intertwine
103	8	Star Theme	16	Moonling	103	Sci-Fi	103	Moon&Womb	103	Spaceport
		Ethnic								
104	1	Sitar	9	WorldSitar	104	Sitar Buzz	104	Atmossitar	104	Raga No.1
105	2	Banjo	10	Ethnoba	105	BanjoDual	105	DownYonder	105	Ethnicity
106	3	Shamisen	11	MelloShami	106	Shamijo	106	Shame-isen	106	Toru
107	4	Koto	12	Amakudari	107	Soft Koto	107	Kotobaba	107	Ethnotal
108	5	Kalimba	13	Kalimbex	108	Kalidark	108	Chasers	108	Kalimpanad
109	6	Bagpipe	14	The Moors	109	Bag O'pipe	109	Bagboe	109	Bags
110	7	Fiddle	15	Git Fiddle	110	Violin Ace	110	ZizzViolin	110	Violin Orc
111	8	Shanai	16	Shanaye	111	Shan'sReed	111	Tom'sO'Man	111	1001Nights
		Drums/Perc								
112	1	TinkleBell	9	D4 Pwr Kit	112	Real Rock	112	Ambi Rock	112	Cirque
113	2	Agogo	10	Pop Up Kit	113	Dry70'sKit	113	Trashy Kit	113	Agogo Gone
114	3	Steel Drum	11	UrbanBliss	114	Hipp Kitt	114	T Funk Era	114	SteelDrama
115	4	Wood Block	12	Straight 8	115	Bomb Kit	115	PiqueDrumz	115	WdBlockage
116	5	Taiko	13	9 Time	116	HardcorKit	116	Harlem Tek	116	KodoDrummr
117	6	Melo Tom	14	Techno Kit	117	Club Kit	117	Big Dance	117	MelodicTom
118	7	Synth Drum	15	IsmellFUNK	118	Old School	118	15ips Kit	118	WhistlDrum
119	8	ReverseCym	16	Gruvy Lube	119	Destructo!	119	Asylum Kit	119	ReverseRap
		Effects								
120	1	Gt.FretNze	9	Psyclotron	120	Swamp Goop	120	Bonk	120	Gutteral
121	2	Breath Nze	10	UB Riddim	121	Dub Lander	121	Go On	121	ThatCoyote

122	3	Seashore	11	Crenshaw	122	Sweat	122	Donut Shop	122	T I M E !
123	4	Bird	12	Razor Edge	123	Nodes	123	Abuser	123	Heartbeat
124	5	Telephone	13	Get On	124	Git Along	124	Dino + Dog	124	Laboratory
125	6	Helicopter	14	Herkin It	125	Danger Tip	125	Fried	125	Nostromo
126	7	Applause	15	Caravania	126	Nanites	126	Insectagon	126	1stContact
127	8	Gun Shot	16	*silent prog*	127	Cricketry	127	TseTse Fly	127	Final Dawn

The ROM Sounds

This is a list of the sample families that are built in to the NanoSynth's 8 megabytes of sound ROM. They are the "raw materials" that the programs combine, in different ways, to create the unit's 640 programs.

You will note that they are set up in two different lists. This is because the sound architecture of the NanoSynth is identical to that of the Alesis QS6 synthesizer, meaning that it can be programmed — using Mark of the Unicorn's Unisyn, or some other editor/librarian software — in either program mode or drum mode, and the ROM sounds are available in different groupings for each.

Piano	GrandPiano
	Dark Piano
	BritePiano
	PianoModul
	NoHamrGrnd
	NoHamrBrit
	VelAttkPno
	VeloPiano1
	VeloPiano2
	PianoKnock
	BriteRoads
	Dark Roads
	Soft Roads
	VeloRoads1
	VeloRoads2
	VeloRoads3
	BrtRdsWave
	DrkRdsWave
	SftRdsWave
	Wurlser
	Wurlser V1
	Wurlser V2
	WurlserWav
	FM Piano
	FM Tines
	Soft Tines
	VelAtkTine
	Vel FM Pno
	Clavinet
	Harpsicord
	VAtkHarpsi
	HarpsiWave
Chromatc	Glock
	Xylophone
	Marimba Hd
	Marimba Sf
	MarimbaVel
	Vibes
	Ice Block
	Brake Drum
	FMTblrBell
	FMTub/Null
	TubulrWave
	TubWv/Null
Organ	FullDrwbar
	Rock Organ
	Perc Organ
	16′Drawbar
	5 1/3′ bar
	8′ Drawbar
	4′ Drawbar
	2 2/3′ bar
	2′ Drawbar
	1 3/5′ bar
	1 1/3′ bar
	1′ Drawbar
	Percus 2nd
	Percus 3rd
	Percus Wav
	HollowWave
	ChurchOrgn
	Principale
	Positive
	60′s Combo
Guitar	SteelStrng
	NylonGuitr
	Nylon/Harm
	Nylon/Harp
	JazzGuitar
	SingleCoil
	Sngle/Mute
	DoubleCoil
	DCoil/Harm
	DCoil/Jazz
	D/S Coil
	MicroGuitr
	PwrH/MGtr1
	PwrH/MGtr2
	MuteGuitar
	Mute Velo
	Metal Mute
	MGtr/MtlMt
	MtlMut/Hrm
	Fuzz Wave
	ClsHarmncs
	ElecHarmnc
	Pwr Harm 1
	Pwr Harm 2
	Pwr Harm 3
	PwrHrmVel1
	PwrHrmVel2
	PwrHrmVel3
Bass	StudioBass
	Studio&Hrm
	Studio/Hrm
	Slp/Studio
	Slap Bass
	Slap&Harm
	Slap/Harm
	Slap/Pop
	Pop/Slap
	Bass Pop
	Pop/Harm
	Harm/Pop
	JazzFingrd
	Fingr&Harm
	JazzPicked
	Pickd&Harm
	Jazz Velo
	Muted Bass
	Stik Bass
	Stik&Harm
	Stik/Harm
	Fretless

	Frtls&Harm
	AcousBass1
	AcoBs1&Hrm
	AcousBass2
	AcoBs2&Hrm
	VelAcoBass
	3-VelBass1
	3-VelBass2
	3-VelBass3
	3-VelBass4
	BassHarmnc
String	StringEnsm
	AttkString
	Violin
	Cello
	Pizz Sectn
	Pizz Split
	Strng/Pizz
	Pizz/Strng
	Harp
Brass	Brass Ensm
	Trumpet
	MuteTrumpt
	Trombone
	FrenchHorn
	Bari Horn
	Tuba
Woodwind	Bassoon
	Oboe
	EnglishHrn
	Clarinet
	Bari Sax
	BrthyTenor
	Alto Sax
	SopranoSax
	Velo Sax
	Flute
	FluteWave
	Shakuhachi
	PanPipe Hd
	PanPipe Md
	PanPipe Sf
	PanPipeVel
	Pan Wave
	BottleBlow
	BottleWave
	Wood Chiff
Synth	J Pad
	M Pad
	X Pad
	Velo Pad 1
	Velo Pad 2
	Velo Pad 3
	AcidSweep1
	AcidSweep2
	AcidSweep3
	AcidSweep4
	AcidSweep5
	VeloAcid 1
	VeloAcid 2
	VeloAcid 3
	VeloAcid 4
	AnalogSqr1
	AnalogSqr2
	AnalogSqrV
	Sync Lead
	Seq Bass
	SeqBassVel
	Tek Bass
	FatSynBass
	TranceBas1
	TranceBas2
	VeloTrance
	FilterBass
	FM Bass
	FM/FiltVel
Wave	Pure Sine
	10% Pulse
	20% Pulse
	50% Pulse
	Velo Pulse
	Mini Saw
	Saw Fltr 1
	Saw Fltr 2
	Saw Fltr 3
	Saw Fltr 4
	RezSaw UK
	RezSaw USA
	Acid Saw
	Velo Saw1
	Velo Saw2
	Velo Saw3
	Velo Saw4
	Velo Saw5
	AcidRezSqr
	VelAcidWav
	MiniSquare
	Sqr Fltr 1
	Sqr Fltr 2
	VeloSquare
	Mini Tri
	Tri Filter
	Velo Tri
	Rectanglar
	Hard Sync
	HSync/Rect
	Additive 1
	Additive 2
	VeloAdditv
	Digital 1
	Digital 2
	Digital 3
	Digital 4

	Science 1
	Science 2
	Science 3
	Science 4
	VelScience
	Metal Wave
	Inharmonc1
	Inharmonc2
Noise	WhiteNoise
	Spectral 1
	Spectral 2
	Crickets
	Rain Noise
	VeloNoise1
	VeloNoise2
	VeloNoise3
	Noise Loop
	Bit Field
Voice	VocalAhhs
	Soft Ahhs
	Ahhs Wave
	VocalOohs
	Soft Oohs
	Oohs/Ahhs
	Ahhs/Oohs
	Whistle
Ethnic	Sitar
	Sitar Wave
	Shamisen
	Koto
	DulcimerHd
	DulcimerMd
	DulcimerSf
	DulcimrVel
	DulcmrWave
	EuroAccrdn
	Harmonica
	Banjo
	Kalimba
	Steel Drum
	Tuned Pipe
Drums	StandrdKit
	Rock Kit 1
	Rock Kit 2
	Dance Kit
	Brush Kit
	ElctricKit
	Tek Kit
	Rap Kit 1
	Rap Kit 2
	IndustrlKt
	Metal Kit
	HvyMtl Kit
	VeloMtlKit
	Wild Kit
	Octave Kit
	OrchstraKt
	Deep Kick
	Big O Kick
	GarageKick
	CrunchKick
	Rap Kick
	Tek Kick
	AnalogKick
	GrooveKik1
	GrooveKik2
	Studio Snr
	Big O Snr
	PiccoloSnr
	ScratchSnr
	BrassSnare
	Rimshot
	Rap Snare1
	Rap Snare2
	Tek Snare
	BrushSnare
	Sidestick
	Rack Tom
	Floor Tom
	Cannon Tom
	Rap Tom
	Hex Tom
	Closed Hat
	Open Hat
	FootClosed
	RapClsdHat
	RapOpenHat
	TekClsdHat
	TekOpenHat
	RideCymbal
	Ride Bell
	Crash Cym
	Splash Cym
	China Cym
	Rap Cymbal
	Cym Wave 1
	Cym Wave 2
	Cym Wave 3
	Cym Wave 4
	Cym Wave 5
	Cym Wave 6
Percussion	Timpani
	Timp/Null
	Agogo
	Bongo
	Cabasa
	Castanet
	Chimes 1
	Chimes 2
	Claps
	Clave
	Conga Hit
	Conga Slap

	Conga Rap	Hat Loop 1
	Cowbell	Hat Loop 2
	CowbellRap	Hat Loop 3
	FingerSnap	Hat Loop 4
	Guiro Long	Hat Loop 5
	GuiroShort	Maracas Lp
	Maracas	Sleigh Lp1
	SambaWhstl	Sleigh Lp2
	ShortWhstl	Shaker Lp1
	Shaker	Shaker Lp2
	Sleighbell	Tabla Loop
	Tabla	Taiko Loop
	Taiko Drum	TalkDrmLp1
	Taiko Rim	TalkDrmLp2
	TalkngDrum	RattleLoop
	Tambourine	Cyrinth
	Timbale	WavLoop1.0
	Triangle	WavLoop1.1
	TriangleMt	WavLoop1.2
	Vibrasmack	WavLoop1.3
	Wood Block	WavLoop1.4
		WavLoop1.5
Sound FX	Rain	WavLoop1.6
	Bird Tweet	WavLoop1.7
	Bird Loop	WavLoop1.8
	Bird Tuned	WavLoop2.0
	Telephone1	WavLoop2.1
	Telephone2	WavLoop2.2
	Jungle 1	WavLoop2.3
	Jungle 2	WavLoop2.4
	Pop	WavLoop2.5
	Pop Attk	WavLoop2.6
	Scratch 1	WavLoop2.7
	Scratch 2	WavLoop2.8
	Scratch 3	WavLoop3.0
	Scratch 4	WavLoop3.1
	Scratch Lp	WavLoop3.2
	Wipe	WavLoop3.3
	Wipe Loop	WavLoop3.4
	Orch Hit 1	WavLoop3.5
	Orch/Null	WavLoop4.0
	Dance Hit	WavLoop4.1
	Dance/Null	WavLoop4.2
	Zap Attk 1	WavLoop4.3
	Zap Attk 2	WavLoop4.4
	Zap Attk 3	WavLoop4.5
	Fret Noise	Kick Loop1
	Sci Alert	Kick Loop2
		Kick Loop3
Rhythm	SynDrumLp1	SnareLoop1
	SynKickLp1	SnareLoop2
	SynSnarLp1	Back Beat1
	Agogo Loop	Crunch LP1
	Bongo Loop	Crunch LP2
	CabasaLoop	Psi Loop 1
	CastanetLp	Psi Loop 2
	Claps Loop	Psi Loop 3
	CongaLoop1	Psi Loop 4
	CongaLoop2	Hit Loop

Pop Loop
Syn Loop
Tri LoopHd
Tri LoopSf

DRUM MODE

Kick
Deep Kick
Big O Kick
GarageKick
CrunchKick
Rap Kick
Tekno Kick
AnalogKick
GrooveKik1
GrooveKik2

Snare
Studio Snr
Big O Snr
PiccoloSnr
ScratchSnr
Brass Snr
Rimshot
Rap Snare1
Rap Snare2
TeknoSnare
BrushSnare
Sidestick

Tom
Hi Rack
Low Rack
Hi Floor
Mid Floor
Low Floor
Hi Cannon
Mid Cannon
Lo Cannon
Hi Rap Tom
MidRapTom
LowRapTom
Hi Hex Tom
MidHexTom
LowHexTom

Cymbal
Closed Hat
Open Hat
FootClosed
RapClsdHat
RapOpenHat
TekClsdHat
TekOpenHat
RideCymbal
Ride Bell
Crash Cym
Splash Cym
China Cym
Rap Cymbal
Cym Wave 1
Cym Wave 2
Cym Wave 3
Cym Wave 4
Cym Wave 5
Cym Wave 6

Percussion
Agogo Hi
Agogo Low
Bongo Hi
Bongo Low
Brake Drum
Cabasa
Castanet
Chimes 1
Chimes 2
Claps
Clave
Conga Hi
Conga Low
Conga Slap
Cowbell
FingerSnap
Guiro Long
GuiroShort
Ice Block
Kalimba Hi
KalimbaLow
Maracas
PnoKnockHi
PnoKnockLo
SambaWhstl
ShortWhstl
Shaker
Sleighbell
SteelDrmHi
SteelDrmLo
RapCongaHi
RapCongaMd
RapCongaLo
RapCowbell
Tabla Hi
Tabla Low
Taiko Low
Taiko Hi
Taiko Rim
TalkDrumHi
TalkDrumLo
Tambourine
Timbale Hi
Timbale Lo
Timpani Hi
TimpaniMid
Timpani Lo
Triangle
TriangleMt
Vibrasmack
WoodBlokHi
WoodBlokLo

Sound FX
Bird Tweet
Bird Loop
Fret Noise
Jungle 1
Jungle 2
Orch Hit
Dance Hit
Pop
Pop Attk
Rain
Scratch 1
Scratch 2
Scratch 3
Scratch 4
Scratch Lp
Telephone
Wipe
Wipe Loop
Zap Attk 1
Zap Attk 2
Zap Attk 3
Sci Alert
Noise Loop
Bit Field

Wave
HiWhitNoiz
MidWhtNoiz
LowWhtNoiz
High Sine
Mid Sine
Low Sine
HiSpectrl1
LoSpectrl1
HiSpectrl2
LoSpectrl2
HiCrickets
LoCrickets
Inharm 1
Inharm 2
High Saw
Low Saw
High Pulse
Low Pulse
Hi AcidRez
LowAcidRez
Metal Wave
HiMetlMute
LoMetlMute
Hi DistGtr
LowDistGtr
Hi PwrHarm
LowPwrHarm
Hi FunkGtr
LowFunkGtr
Hi MuteGtr
LowMuteGtr
HiElecHarm
LoElecHarm
ClsclHarm
HiBassHarm
MidBassHrm
LowBassHrm
HiSlpBass
LoSlpBass
Hi BassPop
LowBassPop
Muted Bass
Stik Bass
StudioBass
JazzFingrd
JazzPicked
Fretless
AcousBass
60's Combo
Hi Piano
Mid Piano
Low Piano
High Sync
Low Sync
Hi Synth
LowSynth
Ahhs Low
Ahhs Mid
Ahhs High
Oohs Low
Oohs Mid
Oohs High

Rhythm
Agogo Loop
Bongo Loop
CabasaLoop
SynDrumLp1
SynKickLp1
SynSnarLp1
CastanetLp
Claps Loop
CongaLoop1
CongaLoop2
Cyrinth
Hat Loop 1
Hat Loop 2
Hat Loop 3
Hat Loop 4
Hat Loop 5
Maracas Lp
Sleigh Lp1
Sleigh Lp2
Shaker Lp1
Shaker Lp2
Tabla Loop
Taiko Loop
TalkDrmLp1
TalkDrmLp2
RattleLoop
WavLoop1.0
WavLoop1.1
WavLoop1.2
WavLoop1.3

WavLoop1.4
WavLoop1.5
WavLoop1.6
WavLoop1.7
WavLoop1.8
WavLoop2.0
WavLoop2.1
WavLoop2.2
WavLoop2.3
WavLoop2.4
WavLoop2.5
WavLoop2.6
WavLoop2.7
WavLoop2.8
WavLoop3.0
WavLoop3.1
WavLoop3.2
WavLoop3.3
WavLoop3.4
WavLoop3.5
WavLoop4.0
WavLoop4.1
WavLoop4.2
WavLoop4.3
WavLoop4.4
WavLoop4.5
Kick Loop1
Kick Loop2
Kick Loop3
SnareLoop1
SnareLoop2
Back Beat
Crunch LP1
Crunch LP2
Psi Loop 1
Psi Loop 2
Psi Loop 3
Psi Loop 4
Hit Loop
Pop Loop
Syn Loop
Tri LoopHd
Tri LoopSf

4: MIDI RULES

The Basics

The NanoSynth receives data on all 16 MIDI channels at a time. This cannot be altered, but individual channels can be "muted" by the assignment of User Bank Program 127 (see "The Not-So Basics," next).

During MIDI playback you can change categories and programs at any time, either by sending Bank Select or Program Change messages, or by turning the CATEGORY or PROGRAM knobs on the front panel. In the case of the latter technique, you will only change the program assigned to the MIDI channel that matches the current MIDI knob setting.

There are 640 programs in the NanoSynth. But there are only 128 MIDI program numbers (000-127). To make it possible to activate any of the 640 programs via MIDI, they have been separated into five banks of 128 programs each.

Assuming you are using only one NanoSynth, the first bank (General MIDI) is selected by sending a Controller 0 command (Bank Select) with a value of 0. The second bank (User Bank) is selected using a Bank Select command with a value of 1. Banks 2, 3, and 4 are selected using Bank Select commands with values of 2, 3, and 4 (respectively).

Working solely from the front panel, only the 256 programs in the General MIDI and User banks are available. These are organized in 16 categories of eight programs each.

The 16 categories are chosen using the CATEGORY knob. They are:

Piano
Chromatic
Organ
Guitar
Bass
Strings
Ensemble
Brass
Reed
Pipe
Synth Lead
Synth Pad
Synth FX
Ethnic
Drums/Percussion
Effects

Individual programs for these categories are selected using the PROGRAM knob, with positions 1-8 representing programs in the General MIDI bank, and positions 9-16 representing programs in the User bank.

NOTE: It's possible to get confused here, if you don't pay attention, by the interaction of the front panel knobs and incoming MIDI Bank Select and Program Change commands.

First, when you send Bank Select and Program Change commands, the front panel knobs don't move. This means that you could easily be playing PIANO 1 via MIDI, say, while the two knobs point toward EFFECT 12. Don't be fooled.

Secondly, the latest Bank Select command that the NanoSynth receives, either from its front panel or over MIDI, is what it pays attention to. For an example of this, consider the following situation. Using MIDI, you select the User bank and a certain program you like. Then someone comes along (while you aren't looking) and turns the PROGRAM knob setting for that MIDI channel to one of the General MIDI bank programs. Now General MIDI is selected, and if all you send the NanoSynth is a Program Change command (instead of a Bank Select followed by a Program Change) you won't get the program you wanted. Instead, you'll get the same-numbered program in the General MIDI bank.

TIP: Because of this, I suggest that you always send both a Bank Select command and a Program Change command, together, when controlling your NanoSynth via MIDI.

NOTE: Another possible source of confusion is that the front panel knobs on the NanoBass and NanoPiano operate just a little differently than the front panel of the NanoSynth, because (1) those units only respond on one MIDI channel at a time, and (2) they aren't organized around the eight-programs-per category structure mandated by General MIDI.

CONTROLLER 0 vs. CONTROLLER 32: Some sequencers automatically use Controller 32 commands for selecting banks on an instrument. Please be aware that the NanoSynth does *not* respond to Controller 32 commands. The only way to select banks on a NanoSynth via MIDI is to use Controller 0.

The Not-So-Basics

I mentioned earlier that using MIDI gives you real-time control over lots more program parameters than you can adjust from the front panel. Here I'd like to encourage you to experiment with just that.

Sending Mod Wheel data, for example, does some very neat things in various programs. In some (like most of the electric pianos) it will adjust tremolo. In organs it will speed up and slow down the lezlie speaker effect. In other programs it will open the filter for a nice *waaah* sound. Try it and see.

But don't stop there. The four MIDI controllers used across the board in the Alesis QS series of synthesizers can yield great results, too, assuming the program is designed to respond to them. These controllers are 12 (often filter control), 13, 91, and 93.

NOTE: The NanoSynth conforms to the General MIDI spec, which officially identifies controller 91 for "reverb" and controller 93 for "chorus." But don't forget that while the NanoSynth is multitimbral, it only offers one effect at a time — the effect that is part of the program assigned to MIDI channel 1. Which may not be reverb, depending on the program. Controller 91 can be used to control the per-chennel "send" level to this effect, whatever it may be.

Why User Bank Program 127 (“Effects 16”) Is Silent

The NanoSynth responds to all 16 channels, all the time. To silence a particular MIDI channel (or set of MIDI channels) you must assign a special “blank” program to that channel (or channels). This program is #127 in the User bank.

This is easy to do via MIDI. Simply pick the channel you want to “mute” and then send out a Bank Select 1 command followed immediately by a Program Change 127 message.

To make such an assignment from the front panel is not quite so easy, but still far from difficult.

(1) Choose a MIDI channel using the MIDI knob.

(2) Turn the CATEGORY knob to EFFECTS.

(3) Turn the PROGRAM knob to 16.

(4) Use the MIDI knob to select the next channel you wish to silence.

NOTE: User bank Program 127 has been hardwired permanently into the NanoSynth. It cannot be deleted, edited, overwritten, or changed.

MIDI Implementation Chart

		Transmitted	Recognized	Remarks
BASIC	Default	1-16	1-16	
CHANNEL	Changed	1-16	1-16	
MODE	Default	O	Modes 3, 4	
	Messages	O	All Notes Off	
	Altered	O	O	
NOTE		O	0-127	
NUMBER	True Voice	O	0-127	
VELOCITY	Note On	O	X	7-bit Resolution
	Note Off	O	X	
AFTERTOUCH	Keys	O	X	
	Ch's	O	X	
PITCH BENDER		O	X	
CONTROL	1	O	X	Mod Wheel
CHANGE	7	O	X	Volume
	10	O	X	Panning
	11	O	X	Expression
	64	O	X	Sustain Pedal
	91	O	X	Effect Knob Level
	123	O	X	All Notes Off
PROGRAM				
CHANGE	True #	O	0-127	
SYSTEM EXCLUSIVE		X	X	
SYSTEM	Song Pos	O	O	
COMMON	Song Sel	O	O	
	Tune	O	O	
SYSTEM	Clock	O	O	
REAL TIME	Message	O	O	
AUX	Local Control	O	O	
	All Notes Off	O	X	
	Active Sense	O	O	
	Reset	O	O	

X= YES
O= NO

6: SOURCES FOR STANDARD MIDI FILES

There are a number of companies selling standard MIDI files tailored to drive General MIDI instruments such as the NanoSynth. Places to look for such files include your local music store, the ads (especially the classifieds) in magazines such as *Keyboard* (http://www.keyboardmag.com) and *Electronic Musician* (http://www.emusician.com) ...and on the web.

A great guide to on-line MIDI file sources can be found at **http://pacbell.yahoo.com/Entertainment/Music/Computer_Generated/MIDI/Files**. This site lists over a hundred actual download sites. Two personal favorites from the list are The Classical MIDI Connection (http://midiworld.com/cmc/) and The Classical MIDI Archives (http://www.prs.net/midi.html). Once you start looking, you'll surely find your own!

5: CREDITS

SOUND ROM DEVELOPMENT
Erik Norlander
Taiho Yamada
Robert Rampley
Scott Hybl
Athan Billias
Gino Nave
Arnd Kaiser

PROGRAM DEVELOPMENT
Taiho Yamada
Randy Lee
Erik Norlander
Mike Peake
Andrew Schlesinger

SOFTWARE
Grant Kraus
Marcus Ryle
Michel Doidic

MECHANICAL DESIGN
David Douglass
Ron Roberts
Rick Souffle

ELECTRICAL DESIGN
Chris Asmus
John Hancock
Mike Murphy

ASIC DESIGN
Frank Thomson
Grant Kraus

TECHNICAL ASSISTANCE
Craig Devin

...and thanks to KEITH BARR, for believing in the vision.