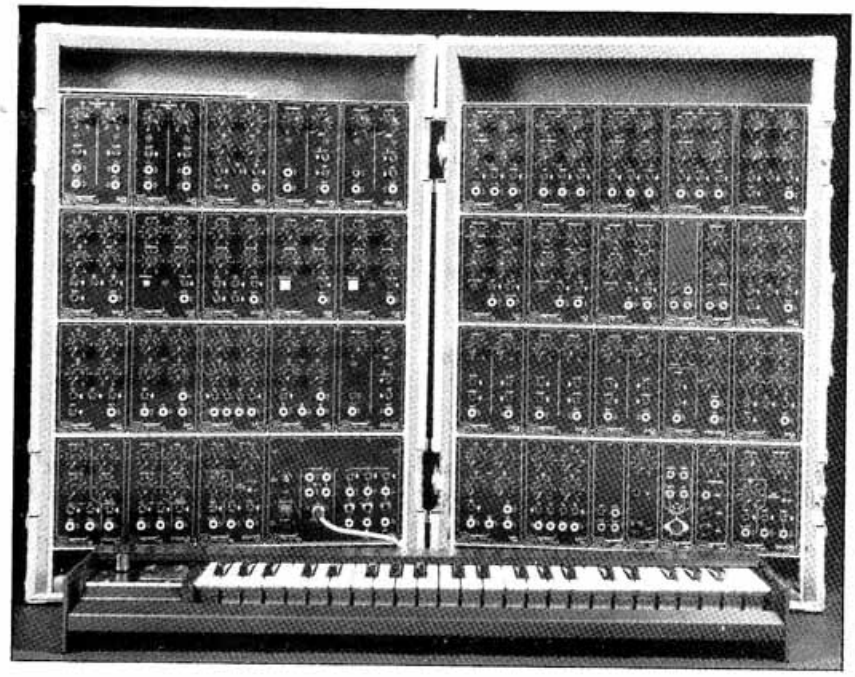
KEYBOARD REPORT

Synton Modular System

By Dominic Milano



THE FIRST SYNTHESIZERS were entirely modular in design — that is, they were made up of whole groups of separate modules that had to be interconnected with patch cords to create sound. Today the limelight is on more performance-oriented systems, most of them polyphonic and programmable. But there are still a few companies involved in manufacturing modular gear for those whose musical needs run less to convenience features than to the kind of flexibility needed for experimental music. In a conventional keyboard synthesizer, you'll find many of the same functions (oscillators, filters, envelope generators, and so on) as in a modular instrument, but in the keyboard instrument these will generally be hard-wired in a fixed configuration. In a modular synthesizer, on the other hand, there is little or no hard-wiring between modules, allowing you to configure whatever kind of signal path you want. The limitation of this freedom is that it can take a while to set up a patch, which makes live performance with a modular system difficult. You can set up one patch before the concert and play it, but it's difficult to make quick changes in midstream. Because of its inherent flexibility, however, a good-sized modular synthesizer may well be the ideal studio synthesizer.

The Synton modular system is manufactured by a Dutch company whose claim to fame has been its vocoders, which get a lot of use in studios. Given the limited appeal of modular gear, it's a bit surprising to see that their first entry in the synthesizer marketplace is modular in design. But they've got all of the basic functions in their system, plus a few unexpected goodies, and if you're interested in modular synthesis, or just in having a few add-on modules to beef up the sound of your Minimoog, the Synton equipment is worth looking into.

The Keyboard. This is a 3-1/2-octave, low-note priority, monophonic keyboard. It has a reasonably good feel, as synthesizer keyboards go. It's not touch-sensitive. To the left of the keyboard are the left-hand controls. These include a row of switches that control single/multiple triggering (the latter called staccato), portamento on/off and automatic (portamento appears when more than one key is held down), and octave transposing (up or down one octave). These are all useful functions for performance; however, no doubt due to the space limitation, these switches are a bit smaller than they should be for quick, accurate use in a performance situation. In a studio, where you can be a bit more relaxed, they wouldn't be a problem. In addition to these switches, there are a portamento speed control and a pitch-bending device.

The pitch-bender is somewhat unusual. It's a piece of metal divided in two sections, one that bends the pitch down and one that bends it up. The harder you press down, the more bend you get. The metal gives just a bit, giving a springy feel. Whether you prefer this to the usual wheel or lever is very much a matter of personal preference. If you've spent time learning to bend accurate intervals with a wheel, you may find it hard to duplicate the performance at first with this mechanism.

The keyboard is connected to the front panel of the instrument via a 7-pin DIN plug. The only problem with this system is that the cord is permanently attached to the keyboard chassis. Experience with similar systems such as the ARP 2600 might suggest that there could be problems with the cable shorting out and being difficult to replace. It would have been better if the cable could detach from both the front panel of the instrument and the keyboard chassis so a spare could be carried in case of failure.

The Modules. All of the modules are built to occupy the same amount of front-panel space, approximately 3" wide and 5" high, except for a few that are half-width. Because all the functions of a module have to be crammed onto the front panel within these dimensions, some of the modules don't have all the features that you might like. For example, the VCO has only one control voltage input, and this is not coupled to an on-board attenuator. So if you want to control the oscillator's frequency from two sources — say, the keyboard and a vibrato LFO — you have to use a separate mixer module to sum the two control voltages and attenuate the LFO. When designing your own system, be sure you get enough mixers to do the job.

All the inputs are marked with an arrow pointing at the jack, which is color-coded black, and all the outputs are marked with an arrow pointing away from the jack, which is color-coded blue. Also, banana plugs are used for patching. Banana plugs have an opening in the rear of the plug to allow you to stack one plug on top of another, which is convenient because it eliminates the need for multiples to split signals. You can send one output signal to several different inputs simultaneously. However, you have to remember that banana plugs can be used only as signal splitters, not as mixers. If you try to use them as mixers, control voltages and audio signals will combine, cancel each other out, and do various other things that may drive you mad trying to figure out what's happening to your patch.

The VCO. The 3021 oscillator produces variable-width pulse, sawtooth, and sine waves. Its frequency range is adjustable over a 16Hz to 16kHz range. Coarse and fine tuning controls are provided. The pulse-width control is called a preset control — potentially confusing in that it's yet another use for the word preset — but here the term simply refers to setting (presetting) the duty cycle of the pulse to some amount. The pulse-width is voltage-controllable, and an attenuator for adjusting the amount is built into the VCO module. The VCO also has an input for hard-syncing its frequency to another oscillator. The oscillator's pitch is very stable.

The MXA 3015. This is the mixer module. Four inputs are provided, one of which has no attenuator associated with it because it's designed to produce unity gain at the output. This is useful for processing keyboard control voltages without messing up the one-volt-per-octave calibration of the equal-tempered scale. These modules can be interconnected to form larger mixers, and by interconnecting one input to another, you can amplify incoming signals by as much as 10dB.

Attenuators & Multiples. The 3006 MPL and the 3004 4ATT are multiples and quad attenuators, respectively. Both of these modules feature output attenuators, and their functions are pretty self-explanatory.

The Filters. Two different types of filters are available: the 3017 and the 3224. The 3017 is a 12dB/octave lowpass, highpass, notch, and bandpass filter all in one. The lowpass/notch/highpass function is available as a separate output from the bandpass function, and there is only one cutoff frequency control. There is an attenuator built-in for adjusting the input signal (to prevent overloading the filter), and the cutoff frequency is voltage-controllable. It would have been nice if you could also voltage-control the lowpass/notch/highpass function (which is continuously controllable from a single pot) with an external voltage source.

The 3224 VCF is a dual module containing both a highpass and a lowpass filter. Its cutoff slope is 24dB/octave, and the cutoff frequency and resonance settings are separately adjustable for the two sections of the filter. The highpass and lowpass cutoff frequencies are voltage-controllable, as is the resonance amount of the lowpass filter. Each filter has its own output. At the highest Q setting, the resonance oscillates (it does on the 3017 VCF also).

The LFOs. There are two types of low-frequency oscillators: the 3023 and the 3223. The 3023 features voltage-controllable frequency, variable waveshape output (continuously variable from negative-going sawtooth to triangle to positive-going sawtooth), a reset function (resets the LFO to zero when a positive trigger is applied to the input), and a square wave output.

The 3223 module is a dual LFO with simultaneous triangle and square wave outputs. The frequency of the oscillator is voltage-controllable. Note that on both the 3023 and the 3223, LEDs are provided to indicate the speed of the LFOs.

Envelope Generators. The 3005 and 3010 envelope generators are both ADSR-type devices. The 3005 has both a doorbell-type switch for manual triggering and an external trigger input. The 3010 is a voltage-controlled ADSR. All three slopes and the sustain level accept control voltage inputs — a useful feature that you don't see on performance-oriented synths.

Inverter/Slew Limiter. The 2 INV/SLR 3218 module is a dual inverter and a slew limiter. The inverters are fairly self-explanatory — they turn positive voltages into negative voltages and vice-versa. The slew limiter is useful for processing low-frequency signals, controlling the maximum rate at which they can change value — sort of a lowpass filter for LFOs. Rise and fall times are separately adjustable.

Ring Modulator/Noise Generator. The 3211 is a combination ring modulator and noise generator. The ring modulator accepts X and Y inputs, which it combines and multiplies. It produces all kinds of clangorous effects. It's also useful for frequency-doubling two sine wave inputs. To attenuate the ratio of the two inputs, you've got to go to outside modules like VCAs, mixers, or attenuator modules.

The noise source has a built-in lowpass filter for generating noise that ranges between the white and pink spectrum. Another useful feature of the noise generator is the VLF (very low frequency) noise output. Its sharp peaks can be processed and smoothed out by the slew limiter module and used for random LFO frequency control voltages (or if it's unprocessed by the limiter, it can be used as a random trigger generator). The module also has a noise volume control.

Envelope Follower/Comparator. This module (the 3235) is an envelope follower (the amplitude of audio signals applied to the input comes out as a control voltage which can be attenuated from a control on the module), a trigger delay (converts the rising edge of any square wave or gate input into a narrow pulse — delay can be varied between .25 milliseconds and 250 milliseconds), and a comparator (the output status — either zero or +5 volts — will change when an input voltage crosses a threshold set by the CPR REF control). A comparator is most often used to generate gate signals at irregular or quasi-indeterminate times.

Binary Divider. This module is one of the most interesting in the entire system. It will divide an incoming signal by 2, 4, and 8, with all three outputs available simultaneously. If you apply an input of a single audio-range frequency, the output will be a square wave either one, two, or three octaves below the input. However, the fun begins when you put in signals that aren't just one frequency. Say you put in two oscillators tuned an octave apart. The divider will sample between the two signals because it can't make up its mind which signal to track. Things get real fun when you put in some other interval like a tritone or a seventh and voltage-control the amplitudes of its components through a VCA. This produces some striking timbre changes. The divider can also be used to generate low-frequency gating signals — for example, to trigger an event that occurs only once for every four keyboard notes.

Output & Input Modules. The 3024 is a line out amp that sports an input and an output jack, as well as a gain control. The output jack is a stereo phone jack, wired to feed floating, balanced inputs such as you'd see in a studio. The 3025 is a mic/line input amp for boosting microphone- and line-level input signals. This module also has a gain control and an LED overload indicator. The instrument we had for review also included four outputs on the back panel. Two were standard phone jacks and the other two were banana jacks.

Conclusions. The Synton modules do all the standard things that modular analog equipment is meant to do, and they do them well. Some of the bizarre patches we put together, even with the small demonstration machine we were sent for review, were quite pleasant and intriguing to listen to. But as we said at the beginning, there are several companies making modules, and Synton doesn't really offer too many features that are likely to give it a competitive edge. However, we're told that there are more goodies from Synton in the works, such as computer interfacing and polyphonic applications devices. We found it hard to set up really ballsy-sounding patches, but the sounds that the instrument produces have a vibrant, almost acoustic quality to them that is quite attractive. The modules are compact, making full use of the available panel space, but as we said earlier, there were a number of functions that we would have liked to see be voltage-controllable that weren't. It would also have been nice to have a choice of exponential or linear response on either the VCAs or the envelopes. Overall, though, it's a sturdy little system that could be easily packed into a couple of flight cases and lugged around to studios or live gigs. And the fact that it's modular does give you quite a lot of flexibility compared to the basic Minimoog configuration of modules seen in most performance-oriented instruments.

The prices for the Synton modules are another impressive aspect of the system. These range from $28.00 for the quad attenuator module to $326.00 for the 3-1/2-octave keyboard. Other prices include $100.00 for the 3017 multimode filter, $129.00 for the VCO, $49.00 for the LFO, $67.50 for the dual VCA, and $92.00 for the ring modulator/noise source. Other necessities for the system include 19" racks (which hold five modules) at $52.50 each, and a power supply at $120.50. A set of 20 banana plug cords that range from 12" to 36" long is $35.00. Synton, Box 83.3620 AB, Breukelen, Holland 03462-3499. U.S. distribution by Big Briar, Leicester, NC 28748.