

NOVEMBER 1983 95p

Electronics & **MUSIC Maker**

INCORPORATING COMPUTER MUSICIAN

TONY BANKS GENESIS

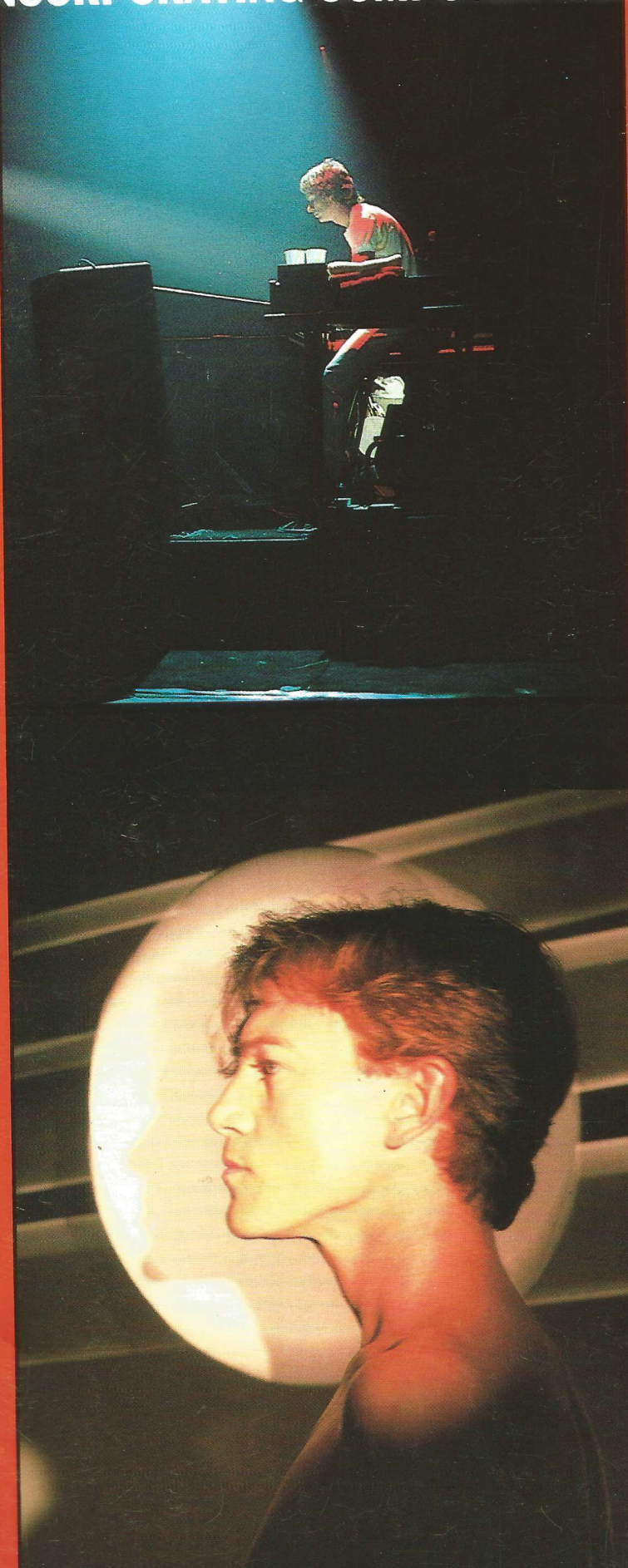
JOHN FOXX

- ★ Sequencer Anatomy
- ★ Mixer Front Ends
- ★ ZX Spectrum Project:
Software Envelope
Generator
- ★ Real-time FM
Harmonic Generator

REVIEWS

Seiko Digital Keyboards
Muzix 81 Composer+ Drummer
Ibanez HD1000 Harmonics/Delay
Korg KMX-8 Mixer
Ibanez RS315CS Guitar
Eko EM10 Keyboard
Add-on Sequencer for
SCI Pro-One
Klone-Kit 2
Dr. Click

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NEW MUSIC GUIDE
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MONTH





MUZIX 81

Composer & Drummer

I first heard about the MUZIX 81 during my interview with Gabor Presser from Hungary. He used this add-on system for the Sinclair ZX81 micro with a Roland Jupiter 4 synthesizer on his LP 'Electromantic' to great effect. He introduced me to his Hungarian friends who had created the software and hardware: Andrew and Alex Szalay of P.R. Computer, and over the last year they have kept me informed of the MUZIX 81 development. The review unit I eventually received is undoubtedly the only one in this part of the world at present, although I am sure it will go a long way towards creating interest and demand for products from this dedicated 'electro-music with computers' company in Hungary.

The MUZIX 81 system must be regarded as unique in that it is the only hardware add-on for the ZX81 that, through its TV screen displays and control unit, allows you to use your own 1 volt/oct analogue synthesizer to compose, edit and replay music (using 'Composer' software), and also lets you design your own rhythms for use with a drum machine that has external trigger inputs (using 'Drummer' software).

The aim of the software is not to turn musicians into computer programmers overnight, but to provide *real time* or direct input of monophonic sequences on an external synth or rhythm patterns on a drum machine, thereby utilising the musician's current skills. What I like most about the real time input is that it automatically converts the synth incoming CV into an easily recognisable number/sign code for later editing if required. On the other hand you can still enter melodies from scratch by these note codes if your playing skills are limited.

The MUZIX 81 unit is a sturdy metal control box with wooden end pieces slightly larger than the ZX81 that has a secured lead and two-way connector for direct link to the micro's rear PCB socket. To operate either the Composer or Drummer software, you will need a ZX81, 16K memory module (which plugs into the

link connector), the MUZIX 81 unit, and of course, your usual TV set and cassette recorder used for computing. I should say right at the start that this hardware/software dual package is extremely good value at around £200 complete (excluding your micro stuff!). The system does, in fact, go a step further in that it allows straightforward layering of melodic lines and drum patterns on multitrack machines such as the Fostex X-15, A-8 or Teac Portastudios. All interfacing adjustments are made with the MUZIX 81 control unit and all connections are sited at the rear of Synth CV and Trigger In/Out, 7 Drum triggers plus Accent trigger, and on the control panel for connection of Start, Stop, Step optional inputs (3.5mm jack), audio In/Out (1/4" jack) and digital out (3.5mm jack). The three rotary controls are for 'Clock' rate, 'Fine' adjustment of Clock, and 'Gain' (for audio input setting from a tape recorder click track). Three momentary pushbuttons for Start, Stop, and Step each have red LEDs and there is one further central LED for clock tempo indication.

Composer

To use the MUZIX 81 as a melody 'Composer', the unit is linked as described to a ZX81 (including TV and cassette recorder) and a 16K RAM module is connected. Next, you'll also need to link a monophonic synthesizer that has 1 volt per octave control voltage input/output plus trigger input/output sockets. The Trigger 1 and 2 sockets on the unit will accommodate Moog, Yamaha (0-4), note name (A-G), sharp (+) flat (-), and trigger) and Roland, Arp and most others on Trigger 2 (voltage trigger). I had no difficulty with the synth input, but a short program entry is outlined that enables you to make offset and tuning adjustments with the internal trimmers using a screwdriver.

The supplied software cassette holds the Composer and Drummer programs on separate sides. Loading of each program takes around 6 minutes. Even though this is

rather slow, once loaded it does not need further access. The MUZIX 81 logo appears and you key in your required notation assignment - sharps or flats - according to the key you're working in. A new screen display will then show the main 'Menu' page.

At this point, if you can't wait to hear that the program works, you can follow some brief instructions and try out the demo music file contained on the cassette.

The Menu contains single keystroke options for recording and playing back a melodic sequence from your synthesizer keyboard. At the top of the Menu the number of bytes free is indicated (maximum 5051) and this gives a good 5 minutes or so of 'average density' music. Also at the top are two rows that constitute the 'Directory' and show by means of inverse colours which sequences have already been created.

Here's an interesting idea that is an important aspect of composing with this system - you consider your music to be made up of phrases or sections that may recur several times. Whether they do or not you sort your melodic line you're dealing with into 'SUB' sequences. Once you've entered a group of SUBs into the computer memory, you then order these correctly to make a complete 'MASTER' section of your piece. The SUB and MASTER files (titled A to V) form the two rows of the Directory.

The lower part of the Menu lists the commands available on pressing the appropriate key. All other keys have no effect except the 'Break' key - the latter must be avoided otherwise you could lose your composition, except when overcoming 'overflow' problems. Taking the commands in turn we have: **Sub Edit** Each SUB holds a 64 note (max) sequence and the hardware will convert correctly over a 64 semitone range (so most keyboards' ranges are available). The chosen SUB (A-V) will be displayed, along with its length, and all the coded notes that make up your sequence.

The codes indicate length (1-8), octave (0-4), note name (A-G), sharp (+) flat (-), and trigger type and/or accent. For example 6.2G+ is a G sharp in the second octave with length 6.

Normally, notes would each receive a trigger out pulse on playback but, by editing with the cursor using the ZX81 4 'arrow' keys, you can send out a gate (appearing at the 'Accent' socket) that lasts the length of the edited note with or without a trigger at the same time (shown by *, =, and / signs at the code end). This 'Accent' is useful for opening filters, adding modulation or emphasising (thro' a VCA) when using an accessible modular synth.

Apart from correcting, deleting or inserting notes, the program lets you enter just the part of the code to be corrected and it will supply the rest of the note info again itself! Typing a 'P' after a length number will give a pause for the length (1-8) - really the number of clock periods. This also enables long notes to be strung together (8.2C then 4P gives a 12 length note). A Repeat option copies the 1st entered note again and it's possible to rename your SUB at any time.

Master Edit Once your SUBS are created by real time or direct code input, you can select and chain them together with the command. The SUB required is entered at the screen cursor position, followed by the number of play times: D0000 means play SUB D four times. The 0's after the D mean that each play is at normal pitch. Transposition of notes 'dynamically' for playback only can be done by entering the semitone jump required, so A022 means play SUB A once at normal pitch followed two more times up a tone.

Another feature is that you can call up

MASTERS within a MASTER file: AOV > means play SUB A once at normal pitch followed by MASTER V once.

Infinite repeats of whole or part of a MASTER can be inserted at the end of a sequence using colon signs. The cursor function allows inserts, deletions and re-naming of your current MASTER file.

Before actually playing back your main MASTER (holding all SUBs and MASTERS that comprise your piece) you have to 'compile' the highly compressed byte info of the MASTERS into a playable output form. This takes a matter of seconds to do after pressing key 'Y'.

Play Pressing 'P' will play the prepared sequence in the compiled MASTER. Actually, the program first enters a 'wait' mode: the ZX81 is waiting for an external clock signal (either from the clock generator in the control unit or from multitrack tape). The playback tempo will be set from this clock, although internal clocking can be adjusted using the 'Clock' control at any time (without affecting pitch, of course). 'Start' and 'Stop' buttons on the control unit will enable or disable any clock pulses and 'Step' will send a single clock pulse (and allow external digital control if you want). The latter's length is actually equal to your keystroke for special timing on playback etc.

Play can be stopped prior to sequence end, for a return to the Menu.

Clock This special command ought to be available on all micro music controllers! Pressing 'C' will start a measurement of incoming clock period, and will quickly display the number of clocks per minute on the screen. This 'tempo' indication is invaluable for reproducing previous tempos assigned to pieces. By altering the 'Clock' control adjustments to tempo can be made.

Save, Load The program allows you to save and load all sequence information held in SUB and MASTER files.

5 seconds you are then asked 'How Many Clocks?'. This will be the total number of bars played times the shortest note played division count for a bar. For example, two bars with fastest note of a quarter (1/4) in 4/4 time will be $2 \times 8 = 16$. After a further pause, the Sub Edit mode will be displayed with the notes played transformed to the correct coding.

Drummer

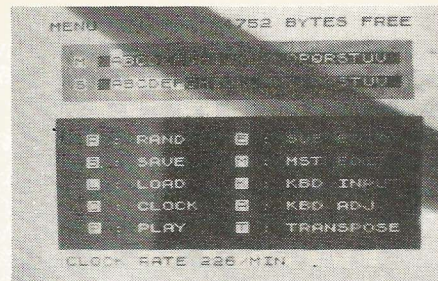
This program is loaded and run in a similar fashion to 'Composer' and will control an external drum machine for direct playback or multitracking. The MUZIX 81 control unit has 7 separately controllable trigger outputs and 1 accent output. Triggers are 20ms long +5V pulses, and Accent is 0 to 5V positive-going. Lines 1 to 6 go to Drums Out 1-6, Line 7 is Accent Out, and Line 8 is Trig Out.

The main difference of the program is in the Sub Edit mode. The screen displays possible instruments you might be using and allocated line numbers. Instrument 'play' beats are set with a cursor-controlled asterisk. A ninth line lets you mark the end of the bar which can be anywhere in its 16 clock counts for different time signatures. There is also a very useful 'Test' function that repeatedly plays the bar as it looks.

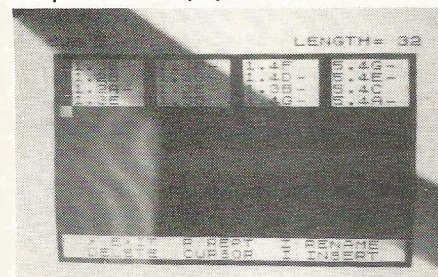
With the 'Drummer' program, a SUB will be a bar of rhythm and the MASTERS will be as before: ordered collections of SUBs and MASTERS to make a whole drum score which can be saved and loaded for performance.

Conclusions

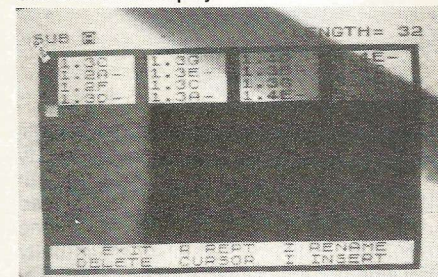
Audio sync tracks can be laid on a multi-track machine and used for synchronising 'Composer' or 'Drummer' files together, so this system really does offer a versatile electro-musician's accessory. I can find nothing much to complain about and even the ZX81 connection tolerated hours of key



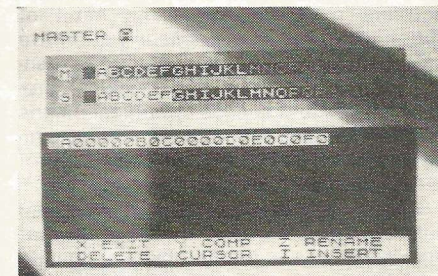
Composer Menu display.



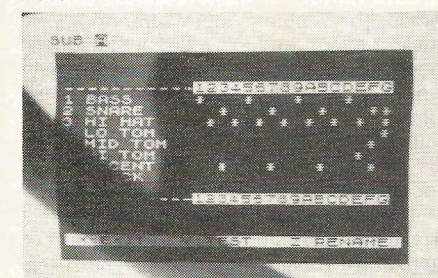
Sub Edit mode display.



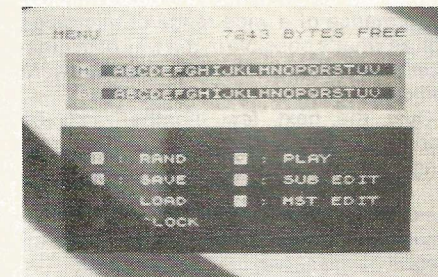
Sub Edit after transposition down 3 semitones.



Master Edit mode.



Drummer Sub Edit display.



Drummer Menu display.

For further details contact Computer Music Studios, 62 Blenheim Crescent, London W11. Tel: 01-221 0192.



Rear connections on the MUZIX 81.

Randomise At first there doesn't seem much point in having this, but it is very useful when recording unison tracks with different synth settings. A random delay (up to 255 mS) can be introduced for this effect. It turns rather thin sounds into big stereo sounds nicely.

Transpose Within the range of the MUZIX 81, any SUB can be transposed by any number of semitones up or down.

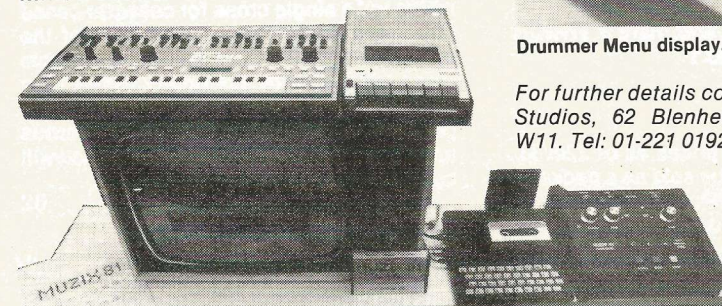
Keyboard Adjust By this time, you may have been reading this and wondering how the unit knows that a particular CV output represents middle C and so on. Well, the answer lies in this command. You're asked to play middle C, followed by an octave higher C on your synth. After a pause you'll either get the Menu back (for 'Okay' status) or a 'failed' indication.

Keyboard Input Once the keyboard has been 'adjusted' as above, then this is the command for real time input. As long as you play evenly you can play more slowly than the final tempo. On reaching the last note you hit a micro key to stop it correctly. After

command punching (unusual for ZX81's!). A version will be available soon for the Sinclair Spectrum and further projects for the MUZIX 81 include an audio processor that does echo, harmonising, sound sampling and digital synthesis. So for anyone with a mono synth, ZX81, and a multitracker, it'll transform your music - with a drum controller bonus that will drive E&MM's stereo drum board perfectly.

Mike Beecher

E&MM



ZX81, 16K RAM pack, and MUZIX 81 control unit.