MUZIX81 DIGISYNT
Reference manual

Following the AUDIO EFFECTS, the SIMULATOR and the MULTISIM the DIGISYNT is the fourth musical software for the MUZIX81 AUDIO PROCESSOR. While the SIMULATOR allows you to record and play various musical sounds and effects, the DIGISYNT creates them itself.

You can construct 22 different spectrums consisting of 16 Fourier components so that the amplitudes of the components are displayed in a graphic and a digital manner at the same time. Six different sounds - here called waves - can be built up from these. Each wave contains a chain of breakpoints. One spectrum belongs to each breakpoint. This is a rather general form of the usual ADSR function, having unlimited capabilities both in time and in spectral structure. When you are playing a wave the program makes a continous transition from one breakpoint to the other by interpolating between the corresponding spectral amplitudes. Moreover you can define 16 frequency modulation functions and choose them for any wave - a possibility also for FM synthesis. A modulation contains two data for each of the 16 components, an intensity and a frequency value.

Setting up and tape loading happens the same way as it is described in the MUZIX81 AUDIO user's manual.

THE MENU SCREEN

The menu screen contains three parts:

1./ The upper screen shows you which of the waves, modulations and spectrums are filled up with musical data (inverted letters mean free place).

2./ The main menu consists of 16 options. 12 of them (I,D,T,P,C,L,N,U,B,G,S,J) are identical to the corresponding commands of the SIMULATOR menu. The four new commands of the DIGISYNT will be described detailed.

3./ The lower screen informs you on the status of the system.

DETAILED COMMANDS

E-SPEC (Spectrum Edit)

First the prompt "WHICH SPECTRUM?" appears. Pressing the key of the chosen spectrum you can see the present value of the 16 Fourier components (called 0-F) of the spectrum. There are 10 options:

5 - cursor left.
6 - decrease the amplitude of the component pointed by the cursor.
7 - increase it.
8 - cursor right.
I - increase all amplitudes at the same time.
D - decrease them.
N - While the DIGISYNT makes musical sounds it uses the values of the amplitudes normed to 255. Pressing N these normed values are displayed.
C - clear, i.e. set every amplitude of the spectrum to zero.
Z - First the prompt "RENAME TO" appears. You can answer by pressing a key (A-V) e.g. K. Then the content of the actual spectrum will be copied to the spectrum K, and you can continue with editing of the later one.
X - exit, i.e. the program returns to the main menu.

W - WAVE (Wave and Modulation Edit)

It is possible to store the data of 6 waves (called A - F) and 16 modulation (called G - V) in the memory. Pressing W and answering to the prompt "WHICH W/M?" you can edit a wave or a modulation.

Wave editing This subroutine accepts the data of the spectrums in the following form:

                    breakpoint.spectrum name

(e.g. 50.B). Breakpoint is the pointer for the memory area where the spectrum is started. It's value can be from 0 to 157. If in the edit line the inverted S character appears, this indicates that the value of the breakpoint or the format is incorrect.

If the cursor stands before MOD, you can write a modulation into the wave (e.g. press H and enter it).

The cursor moves in any direction and any spectrum can be deleted from the wave. Options:

I - Insert the data of a spectrum at the place pointed by the cursor (e.g. 100.A).

Z - Similar to the command Z of the Spectrum Edit mode. Either waves (A - F) or modulations (G - V) can be renamed, but of course not into each other. If you try to rename A to V the progam refuses it, and returns to the menu.

C - clear; delete each spectrum.

X - exit; return to the main menu.

Modulation Editing You can define various sine modulations for each component in the following form:

                    amplitude.frequency   (e.g. 50.70)

Both values can be in the range 0-99.
Options are the same as in wave editing.

Y - COMP (Compile)

Prompts are "WHICH WAVE?" and "WHICH OCTAVE?".
You can choose octave from 0 to 4. Then the screen disappears and the program compiles your wave in the ZX81 memory. Do not worry about the 1 to 3 minute work time. In the directory a white hat indicates which of the waves has been compiled.

H - NAME You can give mnemonical names to your waves.