

This section describes how to configure the software to your specifications.

The ORCHESTRA-80 program is extremely versatile but very complex. In order to minimize the size of the running program and thereby maximize the memory available for music, certain functions are performed only once when the program is first executed.

During this configuration phase, you specify either the standard four-voice synthesizer or the higher resolution three-voice version. If your system has been modified for 2.66MHz operation, you may instruct the program to take advantage of the faster clock. You may also modify the standard sine wave tables to produce different kinds of sounds.

The generation procedure consists of a programmed sequence of steps. At each step, the program will ask a question and wait for your answer. The range of acceptable answers will be displayed with each question. After typing your answer, press the ENTER key. If your answer is accepted, the program will proceed to the next step. If not, the question will be repeated until an acceptable answer is obtained. Your answer should not contain any leading or embedded blanks. Pressing the BREAK key at any time will clear the input line and allow you to retype your answer.

If you have not already done so, connect the interface board to your computer. If you have a disk system, go to STEP 3. The first steps apply to tape systems only.

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|----------------------------|--|
| Step 0                     | <p>Power up the system. Insert and rewind the cassette containing the programs for the tape version of ORCHESTRA-80.</p> <p>A typical loading sequence follows:</p> <pre>MEMORY SIZE? &lt;Enter&gt; Radio Shack Level II BASIC Ready &gt;SYSTEM &lt;enter&gt; *? ORCH8T &lt;enter&gt; *? / &lt;enter&gt;</pre> <p>When the program starts, the screen will be cleared, a copyright notice will appear on the bottom line and the first question in the configuration dialog will appear in the middle of the screen with a blinking cursor on a line below it.</p> |
| Step 1                     | <p>At this point you may request the program make a backup copy of itself. If you answer N, the program will proceed to STEP 4. If you answer Y, continue to the next step.</p>  |
| Step 2<br>Cassette # 2 Y/N | <p>At the previous step you requested a program to duplicate itself. If your system has two cassette decks, and you wish the copy to be written on the auxiliary deck, answer Y. Otherwise answer N and in the standard cassette port will be used.</p>  |

The program will begin writing as soon as you press ENTER. Be sure the cassette deck is ready. Once the file is written, the program or return to Step 1.

Step 3

This -step applies to disk systems only.

Power up the system and load the program. A typical loading sequence follows:

```
DOS READY
ORCH80 <enter>
```

When the program starts the screen will be cleared, copyright notice will appear on the bottom line, and the first question in the configuration dialog will appear in the middle of the screen with a blinking cursor on a line below.

Step 4

Fast Clock Y/N

There are two ways to activate the clock speed at modification hardware, usually a switch or software usually output in a certain value to a certain port. If your speed up modification is controlled by software answer Y. Otherwise answer N and proceeded to step 8.

Step 6

Enable code?

To make Optimum use of a software-controlled clock modification the program needs to know the instructions to execute to enable to fast clock. Enter those instructions up to eight bytes in hexadecimal.

One popular mod is enabled from BASIC with OUT 254,1. In assembly language this is:

```
LD    A,1
OUT   (254),A
```

The hex machine code would be 3E01D3FE

Step 7

Disable code?

It is usually necessary to disable the fast clock before reading or writing to tape or disk. If you tell it how, the program will switch to the standard clock rate before doing any Input/Output. Enter those instructions up to 8 bytes in hexadecimal.

One popular mod is disabled from BASIC with OUT 254,0. In assembly language this is:

```
LD    A,0
OUT   (254),A
```

The hex machine code would be 3E00D3FE

If you wish to do I/O with a fast clock, enter a NOP instruction of 00

Step 8

Four Voices? Y/N

If you want the standard four voice capability answer Y. Otherwise answer N for the higher resolution three-voice synthesizer. Music arranged for four voices cannot be played on a three-voice system. The fourth voice is silent. Three voices systems require less memory.

Step 9

Test Scale? Y/N

If you answer Y, the program will play a sample scale with each of the four different tone colors (registers A, B, C, and D). This step will be repeated until you answer Y to proceed to the next step.

The next five steps allow you to modify the wave forms of the different registers. If you are not already familiar with the use of the system, answer the next step N to bypass the wave form dialog.

Step 10

Alter Sine Tables? Y/N

If you answer Y, the program will proceed to the next step where you are required to define a new register. Answer N to proceed to STEP 15, the end of the system configuration procedure.

Step 11

Register Name?

<A-D>

Enter the name of the register you wish to modify.

Step 12

Number of Partials?

<1-16>

The wave form of a register is defined by a sum of the sine waves or partials. The frequency of each partial is an integer multiple of the fundamental frequency. Partial # 1 is the fundamental. Partial # 2 is the first harmonic and is two times the fundamental frequency. Partial # 3 is the second harmonic and is three times the fundamental, etc. Enter the number of the highest partial you wish to define.

Unless you are after special effects, the number of partials should not exceed 4 for a 1.77Mhz clock, or 6 for a 2.66 Mhz clock. This will keep aliasing and high frequency distortion to a minimum. Refer to the How it Works section for a complete explanation.

Step 13

Partial # 01

Weighting Factor?"

<0-255>

This step will be repeated for each partial to be defined. Enter a number that represents the relative strength of the named partial. A partial with a weight of 200 will be twice as prominent (twice as loud) as a partial with a weight of 100. A partial with a weight of 0 makes no contribution to the final wave form. All

weights are normalized so that a register defined with all partials of weight 1 will be exactly the same register defined with all partials of weight 255.

Step 14

Volume <1-256>

Enter the overall amplitude of the register. The higher the number, the louder it will be.

The program will now generate the register you have just defined. When it has finished the calculations (it may take several seconds), the program will return to STEP 9 to demonstrate the results.

Step 15

Save Program?

<Y/N>

The configured program is now in memory and is ready for use. Answer Y if you wish to save this configured program image and avoid the lengthy dialog in the future. Otherwise, answer N to being execution of the program at Step 18.

Step 16

Program Name?

Enter the file name to be used to save the program. A three-voice synthesizer based on the fast clock might be named ORCH3F.

TAPE version maximum length is 6 characters

DISK version maximum length is 8 characters followed by a drive number. The extension /CMD will be supplied by the program i.e. ORCH3F:0

Step 17

This applies to TAPE systems only.

See STEP 2 for explanation. Be sure to replace the music cassette before proceeding to the next step.

Step 18

If you have not used the ORCHESTRA-80 before, you are probably anxious to hear what it can do. Type

GET LONE <enter>

To load and play the music called LONE. In a few seconds you'll be on your way. Hi-ho Silver, away.