J & K Software

Present

A SPEECH SYNTHESISER

FOR THE

EINSTEIN

USER INSTRUCTIONS

THE EINSTEIN SPEECH SYNTHESISER

The Einstein Speech Synthesiser incorporates the SP0256 speech chip which can generate 64 allophones including 5 pauses of different durations. An allophone is a basic phonetic sound which is modified by the preceding and following sounds in the spoken word. When the allophones generated by the SP0256 are joined in the correct sequence it is possible to create almost any word in the English language.

INSTALLATION

To install the Speech Synthesiser simply plug the 16 way ribbon conector into the User Port at the back of the Einstein. Ensure that the red marker on the cable is at the right hand side of the plug when looking into the socket from the back of the Einstein. The Speech Synthesiser has a volume control and an ON/OFF Switch, the ON/OFF Switch can be used to silence the output if you make a mistake during programming, it also allows the Speech Synthesiser to be permanently connected and switched Off if not required.

OPERATION

The Einstein Speech Synthesiser is controlled via the user port and can easily be programmed from Xtal Basic using the OUT and WAIT Commands as described on Pages 166 & 240-244 of the Basic Manual and Pages 132-135 of the Introduction Manual.

DEMONSTRATION PROGRAMS

The Demonstration Disc enclosed contains five programs :-

1. WELCOME. The Welcome Program is a short introduction showing how to use the Speech Synthesiser.

2 ABC is a fun program which produces a picture for every letter of the alphabet and says "A is for APPLE" etc.

3 DEMO invites you to give the Einstein something to say, words may be typed in using upper and lower case letters, colons and semi colons, as described under PROGRAMMING.

4. SPEECH is a utility to enable speech to be incorporated into other programs. Instructions for using SPEECH are displayed on the screen during the WELCOME program and are included in the section on PROGRAMMING.

5. START is a skeleton program to which data can be added to create your own speech. It includes the basic syntax with which to access the Speech Synthesiser, sound is achieved in this program by using the DATA NUMBERS shown on the allophone list.

Load Xtal Basic, insert the Speech Disc and type RUN"WELCOME", the speech unit will now introduce itself. Instructions for merging your programs with ´SPEECH´ are given, they are also shown below. Next run the ABC and DEMO programs which give an indication of the capabilities of the Speech Synthesiser.

PROGRAMMING

In both the DEMO and SPEECH programs the Allophone Data Numbers have ben converted in such a way that speech can be input using the phonetic sounds of letters direct from the keyboard. Upper case letters produce the sound as though the Synthesiser is spelling the letter and lower case letters produce the phonetic sounds such as infants use.

```
e.g. A produces "AI"
     a produces "AH"
     B produces "BEE"
     b produces "BUH"
```

Numbers are also included from 0 (zero) to 9 (nine)

Pauses to extend a sound can be included by inserting a semi-colon into the speech.Colons can be used in the same way to produce a voiceless pause.

Examples:

    heL;O;:evrEbodE - HELLO EVERYBODY.

    tatun;:::InstIn - TATUNG EINSTEIN.

    InstIn;;;spE;;;sh:sinhesIzo - EINSTEIN SPEECH SYNTHESISER.

It is obviously not possible to obtain all sounds in this way, in which case it is necessary to revert to programming using the the Data Numbers for allophones as shown on the Allophone list and incorporating these into a program which can be merged with the START program.

The DEMO program includes the SPEECH program with a few extra lines starting at line 10. To use it, Load "DEMO", RUN it and type in something for it to say. Listing the program will make clear the idea of calling the main SPEECH program.

To use the SPEECH program write a program to use the speech sounds as produced from the keyboard and MERGE it with SPEECH, insert the text to be spoken in SPEAK$ and GOSUB63010. Ensure that the line numbers of your program do not exceed 62999. The following is an example of a small program to use with SPEECH:-

```
10 INPUT "TYPE IN A WORD ";A$
20 SPEAK$=A$
30 GOSUB63010
40 GOTO10
```

Now follow this procedure:-
1. Load your program.
2. Type HOLD65535
3. Load the SPEECH program
4. Type MGE

The two programs are now merged so that you can now save a complete speech program. Ensure that you use a different program name so as not to overwrite the original SPEECH.

The START program on the disc is the "bare bones" containing the WAIT and OUT commands for sending data to the user port. List the program to see how it is constructed. To use the program place the speech data in DATA statements and RUN the program. The data will be spoken until the number 128 is reached and the program is terminated. The speech data can be found on the Allophone List on pages 5 and 6. More information on the OUT and WAIT commands may be found on pages 166 and 240-244 of the Xtal Basic Manual and on 132-135 of the Einstein Introduction Manual.

ALLOPHONES

The Allophone list below shows the allophone symbol, the syllable which it sounds, the duration of the sound in milliseconds and a sample word in which the sound may be heard.

EINSTEIN SPEECH SYNTHESISER ALLOPHONES

	:ALLOPH	:SYL	:DATA	:DUR´N	:SAMPLE
1	:PA1	:	:00	: 10MS	:PAUSE
2	:PA2	:	:01	: 30MS	:PAUSE
3	:PA3	:	:02	: 50MS	:PAUSE
4	:PA4	:	:03	:100MS	:PAUSE
5	:PA5	:	:04	:200MS	:PAUSE
6	:/AE/	:A	:26	:120MS	:cAt
7	:/EY/	:A/AI	:20	:280MS	:mAde
8	:/XR/	:AIR	:47	:360MS	:chAIR
9	:/AR/	:AR	:59	:290MS	:ARm
10	:/AO/	:AU	:23	:100MS	:tAUght
11	:/OW/	:AU	:53	:240MS	:beAU
12	:/BB2/	:B	:63	:50MS	:Bet
13	:/BB/	:BU	:28	: 80MS	:BUsy
14	:/KK1/	:C	:42	:160MS	:Carpet
15	:/KK3/	:C/K	:08	:120MS	:Cover
16	:/CH/	:CH	:50	:190MS	:CHance
17	:/DD2/	:D	:33	:160MS	:Dozen
18	:/JH/	:DGE	:10	:140MS	:Just
19	:/YR/	:EAR	:60	:350MS	:dEAR
20	:/IY/	:EE	:19	:250MS	:bEE
21	:/EH/	:EH	:07	: 70MS	:Enter
22	:/AY/	:EI/Y	:06	:250MS	:trY
23	:/ER2/	:ERR	:52	:300MS	:ERR
24	:/FF/	:F	:40	:150MS	:First
25	:/GG2/	:G	:61	: 40MS	:Gone
26	:/GG1/	:GU	:36	: 80MS	:GUst
27	:/HH2/	:H	:57	:180MS	:House
28	:/HH1/	:HE	:27	:130MS	:HEllo
29	:/IH/	:I	:12	:70MS	:kItten
30	:/GG3/	:IG	:34	:140MS	:twIG
31	:/ER1/	:IR	:51	:160MS	:sIR
32	:/KK2/	:K	:41	:190MS	:sKip

	:ALLOPH	:SYL	:DATA	:DUR´N	:SAMPLE
33	:/LL/	:L	:45	:110MS	:Last
34	:/EL/	:L	:62	:190MS	:handLE
35	:/DD1/	:LD	:21	: 70MS	:wouLD
36	:/MM/	:M	:16	:180MS	:Make
37	:/NN1/	:N	:11	:140MS	:tiN
38	:/NG/	:NG	:44	:220MS	:aNCHor
39	:/NN2/	:N	:56	:190MS	:None
40	:/UW1/	:O	:22	:100MS	:dO
41	:/AA/	:O	:24	:100MS	:cOt
42	:/UH/	:OO	:30	:100MS	:cOOk
43	:/UW2/	:OO	:31	:260MS	:mOOdy
44	:/OR/	:OR	:58	:330MS	:cORe
45	:/AW/	:OU	:32	:370MS	:shOUt
46	:/OY/	:OY	:05	:420MS	:tOY
47	:/PP/	:P	:09	:210MS	:Pack
48	:/RR1/	:R	:14	:170MS	:Run
49	:/RR2/	:R	:39	:120MS	:dRain
50	:/SS/	:S	:55	:90MS	:teSt
51	:/SH/	:SH	:37	:160MS	:SHot
52	:/TT2/	:T	:13	:140MS	:Top
53	:/TT1/	:T	:17	:100MS	:punT
54	:/TH1/	:TH	:18	:290MS	:THere
55	:/TH/	:TH	:29	:180MS	:THing
56	:/DH2/	:TH	:54	:240MS	:THem
57	:/AX/	:U	:15	: 70MS	:cUp
58	:/VV/	:V	:35	:190MS	:Vent
59	:/WW/	:W	:46	:180MS	:Wood
60	:/WH/	:W	:48	:200MS	:WHip
61	:/YY/	:Y	:49	:130MS	:Yet
62	:/YY2/	:YE	:25	:180MS	:YEs
63	:/ZH/	:Z	:38	:190MS	:Zurich
64	:/ZZ/	:Z	:43	:210MS	:Zoo