

SUPER VOICE

**A SPEECH SYNTHESIZER
FOR THE COLOR COMPUTER**

Speech Systems

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UNPACKING and Installation

Carefully remove the SUPER VOICE from the box and inspect it for possible damage that may have occurred during shipment. If there is any damage, save all packing material and notify the carrier immediately.

Your SUPER VOICE uses circuitry which is sensitive to static electric charges. Do not handle the unit more than necessary. It is imperative that it never be removed or installed while the computer is on. We have seen in several publications, users saying it is acceptable to insert cartridges or peripherals into the computer with power on. This is DUMB and one is asking for trouble.

Repairs

Often a phone call can solve a problem. Therefore, we suggest you call first before returning the unit. We will do whatever possible to aid you in answering your questions and solving the problem.

If the unit is damaged, SPEECH SYSTEMS will repair the unit for a fixed charge of \$25.00, provided that the board is not physically damaged and the SSI-263 chip is not defective. Should this chip be at fault, the cost of this chip will be added. If the SSI-263 is bad, an additional parts charge of \$34.95 will be added. If repairs are necessary, carefully repack the unit and return it with \$25 to the factory. The purchaser would be wise to insure the SUPER VOICE when shipping it. The purchaser will be responsible for payment of postage for shipment to the factory. SPEECH SYSTEMS will pay for return postage to the purchaser.

STOP

NOW THAT YOU HAVE SKIPPED OVER THE COPYRIGHT NOTICE AND OTHER THINGS THAT NO ONE READS... STOP

WE WILL NOW TELL YOU WHAT YOU WANT TO KNOW, HOW TO USE THE SUPER VOICE.

This manual is broken into two sections. The first section is written by Rich Parry of Speech Systems. In this section we will discuss simple questions and get you started. When you have mastered simple uses of the SUPER VOICE you can move on to the more advanced features and the second section which was written by the author of SUPERTOK and TRNSLATOR, Frank Delargy of Del Software.

For the hardcore experimenter, additional information on the SSI-263 chip, which is the heart of the SUPER VOICE, can be obtained from the article, "Build a Third-Generation Phonetic Speech Synthesizer", by Steve Ciarcia in the March 1984 issue of Byte magazine. In addition, the SUPER VOICE is memory mapped into &HFF80 and the 5 registers reside at 80, 81, 82, 83, and 84.

Section 1

or

I'm Not A Programmer And Don't Want To Be
Impress Me with How Easy This Thing Is To Use

The SUPER VOICE is shipped with the software on disk or tape. The disk contains all the programs, while the tape version has the programs on two sides of the same tape. Note that SUPERTOK is on both sides, they are identical and have been placed on both sides as a convenience. The program names are as follows.

Side 1 Development Software	Side 2 Demo Software
SPEAK.BAS	TRNSLATE.BIN
SUPERTOK.BIN	REACTION.BAS
DEMO.DAT	SUPERTOK.BIN
MANAGER.BAS	SIMON.BAS
MANAGER.BIN	BANNER.BAS
DICT32K.BIN	

The extension after the file name indicates whether the file is BASIC (.BAS) or Machine Language Binary (.BIN). The .DAT extension represents a text ASCII file.

Moving Tape to Disk

If you need to move the tape software to disk, you will have no trouble. The easiest way to move tape to disk is with a tape to disk utility available from many vendors. You may also send Speech Systems \$5 and we will send you a disk with the programs on it. Note that SUPERTOK is on both sides of the tape and they are identical. Moving BASIC programs to disk is simple and we assume the disk user would be embarrassed in asking how it is done. Moving the machine language files is also easy provided you know the "starting", "ending", and "execute" address. You will find them below. If you are not sure what to do, we suggest that you read the Radio Shack manual for details of the SAVEM command.

Moving the DEMO text ASCII file to disk is best done with a tape to disk utility. However, you can do it if you CLOAD SPEAK and when prompted for media say TAPE. When the menu is displayed, indicate that you wish to RETURN TO BASIC. Now without turning the computer off, rewind the tape, CLOAD SPEAK and RUN it again, but this time indicate that you are running a DISK system. You may now specify option 4 which allows you to listen to a text ASCII file previously saved. Specify the file to get as DEMO. After it has spoken, you will be asked if you wish to save it. Respond with Yes. The file DEMO will then be transferred to disk.

	Begin Adr.	End Adr.	Execute Adr.
SUPERTOK	&H5800	&H7FFF	&H5800
TRNSLATE	&H6000	&H7FFF	&H6000
MANAGER	&H6000	&H6FFF	&H6000
DICT32K	&H7400	&H7FFF	&H0000

Disk Users

Obviously if you wish to have the SUPER VOICE inserted into the computer at the same time as a disk controller, you will need an expansion device of some sort. Note that our Y-Cable fits the purpose nicely. The Y-CABLE has a gold connector that is inserted into the computer and at the other end are two female connectors. In one you insert the SUPER VOICE and in the other you insert the disk controller.

If you are rich, the Radio Shack Multi-Pak can be used. Note that you can place the SUPER VOICE in any slot you wish and need not bother with moving the switch on the front of the Multi-Pak. In other words, if your disk controller is in slot 4, just have your switch in the slot 4 position and SUPER VOICE can be in slot 1,2, or 3.

So Let's Get Started

Let's take it slow. First (C)LOAD and RUN SPEAK. You will be asked if you using a tape or disk system. If you specify a tape, you must keep the tape player on so that the program can (C)LOADM "SUPERTOK" which is the next file on the tape. You will now see a menu. Try option 1 first. This option gives you the opportunity to type things on the keyboard and have SUPER VOICE speak what you type. (Keep it clean please).

Now let's try the option in which you can load a previously created text file, option 4. Let me suggest you listen to the DEMO file that comes with the SUPER VOICE. This files shows off the full features of the SUPER VOICE. When you are asked for the file name merely type DEMO. Remember, if you are using a tape system the tape player must be on so that it can load in the DEMO file.

There are other options available, however, these are a little more advanced and will suggest the user read the SPEAK portion of section 2 which gives all the details of this program.

Particular attention should be given to the "ECHO" option in which the user can have all text that comes to the screen

spoken. This mode is ideally suited for visually handicapped individuals who wish to program. Also note that you have the option of having the letters spoken individually or as a word by toggling ↑W.

So What About the Manager

The Manager and its associated programs, MANAGER.BIN and DICT32K.bin are intended to allow a user to develop his or her own exception table. The idea of the exception table, is that the SUPER VOICE cannot always pronounce words correctly because many words do not follow standard rules. Therefore, the user may develop an exception table in which the user specifies exactly how a word is to be pronounced. This is a more advanced feature and I will suggest the user read about the MANAGER in section 2 of this manual.

So How Do I Load a Talking BASIC Program

In this section, we will discuss how you can run a BASIC program that speaks. Note the technique that we will discuss is identical to the way you will run any talking BASIC program, including all the programs that we sell separately in our Talking Library. We have provided two programs: REACTION and SIMON to get you started.

You must first understand that the SUPER VOICE is a hardware device which requires a very special program to function. This program is called a text-to-speech program and its purpose is, as its name implies, to convert text (the written word) to speech.

Note that we have supplied you with two text-to-speech programs. The file names are "TRNSLATE" and "SUPERTOK". TRNSLATE is 8K in memory size and does not allow the user to specify all the parameters the SUPER VOICE is capable of. In other words, you cannot specify the volume, articulation etc. We have supplied it for a very good reason. Virtually all of the talking software that we have developed thus far does not take advantage of the features of the SSI-263 chip inside the SUPER VOICE. This program must be used to load and run our talking software such as the talking adventure, FINAL COUNTDOWN or our ADVENTURE GENERATOR. The program REACTION uses the TRNSLATE text-to-speech program.

SUPERTOK is also a text-to-speech program but it does allow the user to specify all the many parameters of the SUPER VOICE such as volume, filtration, articulation, etc. Unfortunately, it is 2K larger in memory size. This is the program that you should load if you wish to take advantage of the power of the SUPER VOICE. SIMON uses this text-to-speech program.

So Let's Get On With It

To play REACTION:

1. CLEAR 100,&H5FFF
2. (C)LOADM "TRNSLATE"
3. (C)LOAD "REACTION"
4. RUN

Now wasn't that easy. In step 1 we are saving memory for the machine language TRNSLATE program. Also note that once it is loaded, it will remain in memory until the computer is turned off. Therefore steps 1 and 2 will be omitted if another talking BASIC program is going to be used.

To play SIMON:

1. CLEAR 100,&H57FF
2. (C)LOADM "SUPERTOK"
3. (C)LOAD "SIMON"
4. RUN

Wasn't that also easy. Note the only difference was in step 1. The two different values of 5FFF and 57FF stem from the fact that SUPERTOK is a larger program and therefore requires more memory set aside for its use.

So When Do I Use "TRNSLATE" and "SUPERTOK"

Good question. If you purchase our talking software, you will want to use the "TRNSLATE" program. You may also wish to use "TRNSLATE" when you have a program that really needs the extra 2K of memory that SUPERTOK uses. However, remember with TRSNLATE you cannot use all the unique features of the SUPER VOICE. In other words, if you are using a program that controls the volume, articulation, etc. of the SUPER VOICE you must use SUPERTOK.

So Let's Hear It Sing

The file BANNER is a BASIC program that we have supplied to allow the SUPER VOICE to sing. This program is loaded and run in the same way as SIMON since it requires the ability to specify pitch and therefore requires SUPERTOK.

To play BANNER:

1. CLEAR 100,&H57FF
2. (C)LOADM "SUPERTOK"
3. (C)LOAD "BANNER"
4. RUN

As previously stated, if SUPERTOK is already loaded, step 3 and 4 is all that is needed. In addition, note that this program was loaded and run in an identical manner as SIMON.

So Far So Good, But I Want to Write My Own Program

A Talking BASIC Program Using SAY

There are two ways that you can write your own talking BASIC program. The first is by using the SAY command and the second is using a USR (User SubRoutine) call. Many users will find the SAY command easy to use, however, it does have a limitation in that a variable cannot be spoken.

Let's look at the SAY command first. We first must load the machine language file SUPERTOK and EXEC &H5816. The actual steps are as follows:

To activate SAY:

1. CLEAR 100, &H57FF
2. (C)LOADM "SUPERTOK"
3. EXEC, &H5816

You can now type on the keyboard SAY HELLO. The following page written by Del Software gives more detail of the SAY command.

DEL SOFTWARE

USER MANUAL

SUPERTOK

***** SAY *****

For the convenience of some users we have added the word 'SAY' to the BASIC vocabulary. With this addition it is easy to put simple spoken phrases in a BASIC program or in the direct mode of BASIC. 'SAY' is not as complete as using the USR calls as described in the manual. For instance with 'SAY' you cannot use variables to describe the text to be spoken. Some of the rules for using 'SAY' follow.

To activate the 'SAY' command you must EXEC &H5816 either in direct mode or in a BASIC program. From now on until you turn the computer off the word 'SAY' will be a valid BASIC command. The easiest way to use 'SAY' is to type

```
SAY HELLO, HOW ARE YOU
```

in the direct mode of BASIC (after an OK and the cursor is blinking). The computer will speak HELLO HOW ARE YOU. Quotes are not needed in the immediate mode, but can be used if you wish. Quotes will not be spoken.

To use 'SAY' in a program line you need only use quotes if one of the words you want to say is a BASIC keyword. The reason for this is if it is not in quotes and BASIC recognizes it as a keyword it will tokenize it into a non-ASCII character (very unpronounceable).

Examples:

```
10 FOR N=1 TO 5  
20 SAY HELLO:PRINT "HELLO"  
30 NEXT
```

* Quotes not needed here as HELLO is not a BASIC keyword. It would also be fine to write line 20 as
20 SAY "HELLO":PRINT "HELLO"

**** EXAMPLE WITH KEYWORDS ****

```
10 FOR N=1 TO 5  
20 SAY "NEW AND SAY"  
30 NEXT
```

* In line 20 above NEW, SAY and AND are all BASIC keywords and must be in quotes.

```
20 SAY NEW AND SAY
```

Would speak garbage.

A Talking BASIC Program Using USR

Another way to write your own talking BASIC program is just about as easy to use as the SAY command, and is certainly more powerful. Note that the second section of this manual goes into more detail and we suggest you examine that section. However, here are three very quick examples and we hope that after studying them, you will find it very easy to write your own BASIC program. Remember, you can also examine REACTION and SIMON for more examples of how to write a BASIC program that speaks.

Assuming the TRNSLATE program is loaded try this:

```
10 DEFUSR0 = &H6005
20 X$ = USR0("HI THERE")
```

Piece of cake!

If you are going to use SUPERTOK then try;

```
10 DEFUSR0 = &H5805
20 X$ = USR0("HI THERE")
```

Notice that the programs only differ in the values of 6005 and 5805.

Here is one more example, it assumes you are using SUPERTOK.

```
10 DEFUSR0 = &H5805
20 INPUT "WHAT SHOULD I SAY";A$
30 X$ = USR0(A$)
40 GOTO 20
```

We sincerely believe that if you think about it a little, you will find the SUPER VOICE very easy to use.

Is the Translator Loaded?

The astute programmer will realize that if a program is started and either TRNSLATE or SUPERTOK is not loaded, when the BASIC program tries to speak, nothing will happen. It is also highly probable that the BASIC program will be destroyed and you may have to shut the computer down and start all over again. We highly recommend that you check to see if the text to speech program is loaded using the following method.

If you are using TRNSLATE use:

```
10 IF PEEK(&H6000) = 127 AND PEEK(&H6005) = 32 THEN 40
20 PRINT "THE TEXT TO SPEECH PROGRAM IS NOT LOADED"
30 END
40 REM *** your talking program starts here ***
```

If you are using SUPERTOK use:

```
10 IF PEEK(&H5800) = 127 AND PEEK(&H5805) = 32 THEN 40
20 PRINT "THE TEXT TO SPEECH PROGRAM IS NOT LOADED"
30 END
40 REM *** your talking program starts here ***
```

We wish to make clear that this method is the only method that will assure compatibility with future versions and all previous versions of our translators. In addition, if you write any software that you wish to submit to SPEECH SYSTEMS for possible marketing, this checking method and only this checking method will be accepted.

Section 2

or

I'm A Hot Shot Programmer

Impress Me With What This Thing Can Really Do

THE SUPERTOK M/L PROGRAM AND SPEAK ©

You will find it very easy to use the text to speech programs by following the menu prompts within the BASIC program SPEAK. To get started you first load the program SPEAK. Prepare tape recorder for loading and type in CLOAD "SPEAK" (RUN "SPEAK" for disk). For tape systems, when the program has loaded keep the play button depressed on the recorder and type "RUN". The Program is now loading the machine language routine that does most of the work and a built-in standard dictionary. When the program is through loading you will be prompted by a menu on the screen. An explanation of the menu items follows;

1. Direct input from keyboard.

Choosing this mode will allow you to enter short phrases and sentences that will be spoken upon hitting the [ENTER]key. After the computer speaks out the phrase an arrow prompt will appear for the next line of input. Hit [ENTER]at the prompt to return to the menu. This mode is ideal for getting used to the sound of the computer speech and for trying out new words.

2. Direct speech with phonemes printed.

This mode is identical to mode one above with one addition. After the phrase is spoken, the phonemes that were use for pronunciation are displayed on the screen or printer. This gives you the ability to try different spellings to get better pronunciation. When you get the pronunciation that you like, you can then use the phonemes output to add that correct pronunciation to the dictionary (discussed at length in following pages).

3. Build text from keyboard.

This mode allows you to input more than one line at a time. The computer will wait until you hit [ENTER] twice in a row at the beginning of the line before it will begin to speak. Using this mode you can compose long messages. After the text has spoken you will be given a chance to save the text to tape or disk for later retrieval. Follow the prompts by answering with a 'Y' or 'N' and inputting a valid filename when prompted (for tape, make sure the RECORD button is depressed). By saving the file to tape or disk you can send it to anyone else who has this program and they can hear and see your message by using the next mode.

4. Speak text from tape file.

By choosing this mode you will be able to hear the text that is saved in an ASCII file on tape or disk. Follow the prompts, making sure that the tape or disk is ready to be read when prompted. For tape: make sure RECORD button is NOT depressed. You will get an I/O error if the tape is positioned in the middle of a program. This feature allows you to read in files that can store long speeches or songs.

5. Screen echo.

When in this mode each alphanumeric character that is printed on the screen will also be spoken. Choosing menu choice 5 Just initializes the computer to allow this feature. To turn it on and off you hit the SHIFT key and the CLEAR key together whenever keyboard data is being echoed to the screen. This mode will stay active until the computer is turned off or you load in a new machine language program above &H5800. It is therefore possible for sight impaired persons to hear the keyboard as they are writing their own BASIC programs. Use ↑W to toggle between letter and word echo. Any program that prints to the screen can now talk, e.g. Adventures, databases, check balancing etc.

6. Return to BASIC.

Exits program and returns to BASIC.

The machine language program 'SUPERTOK' can be used by itself. Just LOADM or CLOADM the program and type EXEC (be sure to clear high memory first). You will then be in Mode 1. Hitting [ENTER] at the prompt will return you to BASIC.

SOME RULES

Numbers and special characters are recognized by the M/L program and will be spoken out. Numbers as high as 999,999,999,999,999.999 will be understood and spoken as trillions, billions, millions, thousands, hundreds, teens etc. Any number bigger than this will be spoken as individual digits (ie. one, two, three .. etc.). The phrase $100 * 3 = 4 * 80 - 20$ will be spoken as; 'ONE HUNDRED TIMES THREE EQUALS FOUR TIMES EIGHTY MINUS TWENTY' If you put a '\$' directly in front of the number string, the program will assume that you are talking money. \$1234.56 will be spoken as 'one thousand two hundred thirty four dollars fifty six cents' Quotation marks will be spoken as 'QUOTE' and the pound sign # will be pronounced as 'NUMBER'. Each comma and period within an alphanumeric string will produce a pause in the output. More commas will give a longer pause. eg. 'HERE IS A SHORT PAUSE, NOW A LONG PAUSE,,,,,,,,,,,,,FINISH LINE' A period (.) found between two numbers will be pronounced 'POINT'.

Control codes: When an Up Arrow is in the text, it will be treated as a control character. The character after the Up Arrow will determine the action taken.
(↑)

You can make the program ignore special characters by sending a # in the string. This will toggle the special character flag and allow you to turn this feature on and off, eg. the phrase $1/2 * 3 = \uparrow \# 1/2 * 3 = \uparrow \# 1/2$ will be spoken as "ONE DIVIDED BY TWO TIMES THREE EQUALS ONE TWO THREE ONE DIVEDE BY TWO". The (#) control code will also Force individual digit output for those cases when speaking out each number is preferred over saying thousands and hundreds, eg. telephone numbers, ZIP Code & Social Security number.

In the phoneme pronunciation mode you can input the phoneme string separated by spaces or commas for direct translation. To enter and leave the phoneme pronunciation mode you need only preface the phoneme stream with ↑P. When in this mode the translator will treat all strings as phonemes (provided they are valid). An example of this would be "NOW ↑P B,UH1,UH3,T,EH,N ↑P BACK TO NORMAL. This will be spoken as 'NOT YET BUTTON BACK TO NORMAL'. It is worth mentioning that the phoneme flag will behave differently depending on whether

you have chosen direct input or multi-line input. In direct input (Menu choice 1.) the flag will stay on until the user turns it off by inserting another ↑P. In the multi-line mode the flag is cleared back to normal after each line is spoken. Returning to the menu will clear the flag and turn the phoneme input mode off. If you are getting funny pronunciation in the direct input mode after using phoneme input, check to make sure that you have switched back. If you want to stay in the phoneme input mode in the multi-line mode remember to start each line with a ↑P.

The program SUPERTOK consists of a M/L text to speech algorithm which first checks to see if a word is in the dictionary which is loaded just above the M/L program. When you load SUPERTOK, you are automatically loading the standard dictionary as well. See the discussion on the MANAGER program for how to create your own special dictionaries.

The procedure for using "TRNSLATE" with your own BASIC program follows:

1. Text to Speech output

The BASIC program must clear enough space in high memory to leave room for the SUPERTOK machine language driver. The SUPERTOK program uses &H5800 to &H7FFF. In addition to the memory reserved for the m/l program you must also clear space for any strings that you plan to use.

A typical program might start;

```
10 PCLEAR 1: REM *clear video RAM unless needed
20 CLEAR 5000,&H57FF: REM *reserve high RAM for M/L
```

The next step is to load the M/L program into memory.

```
30 CLOADM "SUPERTOK": REM * Load m/l program
** The next line is optional....read complete manual for instructions.
35 CLOADM "YOURDICT":REM * Optional custom dictionary loaded
```

There are three entry points to the m/l program

- a. &H5800 for direct input. (Returns to BASIC after empty line)
- b. &H5805 for multi-line input. (Returns to BASIC after each line)
- c. &H5807 for direct input plus phoneme printing

In Extended BASIC we must define these entry points using DEFUSR statement. ie.

```
40 DEFUSR0=&H5800:REM *entry point to direct input
50 DEFUSR1=&H5805:REM *entry point to multi-line input
40 DEFUSR2=&H5807:REM *entry point to direct plus phonemes
```

To speak a phrase we must first put the phrases into a string variable which can be passed to the m/l routine. eg.

```
60 PHRASE$="THIS IS A TEST"
```

Then we just call the m/l program with a USR statement, passing the appropriate string variable by way of USR call.

```
80 X$=USR1(PHRASE$)
```

VOILA! The computer has spoken.

The simplest of programs follows;

```
5 REM *Demo program
10 PCLEAR1:REM *reduce memory reserved for graphics
20 CLEAR 5000,&H57FF:REM *reserve memory for m/l
30 CLOADM "SUPERTOK":REM *load m/l program
40 DEFUSR1=&H5805:REM *define entry point
60 PHRASE$="THIS IS A TEST":REM *place phrase into string variable
70 X$+USR1(PHRASE$):REM *say it
80 END
```

Many variations to this basic procedure can be used. You can, for example, use a subscripted variable to hold multiple phrases. ie.

```
25 DIM PHRASE$(200)
```

The call would then take the form

```
70 X$=USR1(PHRASE$(N))
```

By increasing the index you can then output a very long message. Each phrase is limited by BASIC to 240 characters, including spaces and control codes.

An example;

```
70 FOR N = 1 TO 200
80 X$=USR1(PHRASE(N))
85 NEXT
```

You can enter the variable for PHRASE\$(N) by an appropriate input routine. eg. from the screen;

```
62 FOR N =1 to 200
64 INPUT PHRASE$(N)
66 IF PHRASE$(N)="" THEN 70: REM Hit [ENTER] to finish input
68 NEXT
```

Then speak out array

```
70 FOR M = 1 to N-1
80 X$=USR1(PHRASE$(N))
85 NEXT
```

For some applications the words will be the same each time that the program is run. In this case the variable PHRASE\$ can be read in from a DATA array. eg.;

```
62 FOR N = 1 to 200
64 READ PHRASE$(N)
66 IF PHRASE$(N)="XXX" THEN 70: *look for end of input flag
68 NEXT
70 FOR M = 1 to N-1
80 X$=USR1(PHRASE$(N))
85 NEXT
990 DATA HERE,ARE,THE,WORDS,THAT,NEED,TO BE SPOKEN
991 DATA AND,THE,ENDING,CHARACTER,XXX
```

The BASIC Program 'SPEAK' uses other variations on this theme.

SUMMARY

Following is a summary of rules and hints for using the text to speech software.

Up arrow is control character ↑

Uppercase and lowercase are both O.K. Any character except control codes is O.K. but not all characters are pronounced. eg. a comma or period will cause a pause in normal text to speech.

When in a number string a period will be pronounced 'POINT'.

To spell out a word just separate the letters by a comma or space.
eg. 'WORD IS SPELLED W O R D' or 'TEXT IS SPELLED T,E,X,T'

To pronounce different words try misspelling them to force correct pronunciation. Better yet, put the correct pronunciation in the directory using the phoneme mnemonics with the MANAGER program.

To enter phonemes in the text string preface the phonemes with ↑P and repeat after the phoneme string. You must use capital letters for phonemes. The phoneme flag will be turned off after each line in the multi-line input mode but it will remain on in direct input mode (1) until the user turns it off. Returning to the menu will reset the flag to off.

To turn off the pronunciation of special characters just put ↑# in the text string prior to the special characters. To return to normal put in another ↑#. e.g. =+↑#*-↑#+= (spoken equals plus plus equals)

Volume can be controlled by ↑Vn where n is a value from 0 to 15. 0 (zero) turns the sound off and 15 is the loudest.

The rate of speech can be controlled by ↑Sn where n is a value from 1 to 16. 1 is slowest and 16 is fastest.

You may use the musical scale to raise or lower the voice though a six octave range. Use the command ↑N[s]n where s is an optional scale value 1 through 6. 'n' represents a note from A to G#. flats(b) and sharps (#) are allowed. ↑N1A is the lowest pitch and ↑N6G# is the highest. Use ↑C to get back to default pitch values.

Each line of text is limited by BASIC to 240 characters. You can have as many lines of text as you want until you run out of string space. (remember reserve string space in the CLEAR statement).

Experiment with new ideas. Sound effects are possible by using phoneme mode or by putting the sound of a word in the dictionary.
eg. 'HISS'..HF,I,S,S,S,S,S,S,S,S,S,S,S,S,S,S,S,S,S

When using 'SPEAK' with a cassette you must have the tape recorder ready to load the 'SUPERTOK' M/L program before you type RUN, as the 'SPEAK' BASIC program expects to see the 'SUPERTOK' program ready to be loaded.

Use $\uparrow ITn,m$ (transitioned inflection) to control the inflection and speed of transition of speech.

'n' controls the inflection level, 'm' controls the rate at which the inflection changes. Valid values for n are 1 to 32 (low to high). Valid values for m are 1 to 8 (slow to quick). See the description of SC-02 registers for further information.

Can also control the pitch directly by using $\uparrow IIn$ (immediate inflection) where n is any value from 1000 to 4096. See the description of SC-02 registers for further information.

Articulation can be controlled by using $\uparrow An$ where n is in range 1 to 8. (slurred to crisp). See the description of SC-02 registers for further information.

Control of the voice frequency can be controlled by the use of $\uparrow Fn$ where n is any value from 1 to 255 (low to high). Normal voice frequency is about $\uparrow F232$ to $\uparrow F238$. The frequency can be used to create some very strange sounds.

To get back to the default values for the speech registers you can use $\uparrow C$. This returns to the default values of $\uparrow IT14,3$ $\uparrow V8$ $\uparrow A8$ $\uparrow F233$.

If you want to change some speech control values only for 1 line you can preface the changes with $\uparrow L$. At the end of the line, any register changed after the $\uparrow L$ will be set back to their previous values.

eg. $\uparrow V3$ HELLO THERE $\uparrow L$ $\uparrow V15$ DO YOU HEAR ME.

'Do you hear me' will be Spoken at maximum volume but the next line that is spoken will be at the volume before the $\uparrow L$ (volume level 3).

<u>PROGRAM</u>	<u>LOAD ADDR</u>	<u>END ADDR</u>	<u>EXEC ADDRESS</u>	<u>COMMENTS</u>
SPEAK				BASIC program
SUPERTOK	&H5800	&H73FF	&H5800	M/L program w/o dict
SUPERTOK	&H5800	&H7FFF	&H5800	M/L program + dict
MANAGER				BASIC program
MANAGER	&H6000	&H6FFF	&H6000	M/L program
DICT32K	&H7400	&H7FFF	. . .	Standard dictionary
TRANSLATE	&H6000	&H7FFF	&H6000	Compatible with VOICE

As previously mentioned, the dictionary is a powerful part of the text to speech algorithm. The dictionary occupies the RAM space &H7400 to &H7FFF and can be loaded separately of the TRANSLATE program. The management of any user-defined dictionary is an integral part of an efficient speech output system. The BASIC program 'MANAGER' and the machine language program of the same name allow the user to print out selected parts of the dictionary to the screen or printer. It is also used to add and delete words from the dictionary. In order to conserve memory the MANAGER does not use the text to speech algorithm so that you will not be able to hear the words until you use them with the SPEAK or TRANSLATE programs.

The MANAGER is menu oriented and needs very little in the way of detailed instructions. After loading the BASIC program and typing 'RUN' you will be asked to choose between tape or disk input. With this completed the menu will greet you with the following program functions.

1. LOAD MACHINE LANGUAGE PROGRAM (Needed for editing and printing)
2. LOAD DICTIONARY (Loads use your dictionary to be worked on)
3. EXECUTE M/L PROGRAM (discussed below)
4. SAVE DICTIONARY (Save updated or new dictionary to tape or disk)
5. RETURN TO BASIC.

The machine language program does most of the work. When you execute this program through the menu choice 3. You will see another menu on the top line.

[A]DD [D]ELETE [L]IST [E]ND

Choose the mode by hitting the key implied (A,D,L or E). To add words, first answer 'Y' to the 'Continue Dictionary?' prompt, then typing the word followed by its phonetic spelling. Separate each phoneme by a comma. End the Add Word mode by hitting return at the WORD prompt. To delete a word is very similar, you merely input the word to be deleted followed by [ENTER]. You will be prompted for another word to delete. End the deletion mode by hitting [ENTER] at the WORD: prompt.

If [L]IST is chosen you will be asked to choose from the screen or printer. If you choose the printer make sure that it is ready to print. You now will be prompted for the letter range that you want listed. Input appropriate limits at this time. The output will consist of each word within the alphabetic range, followed by the phonemes that are pronounced. At the completion of the list the last memory location listed will be displayed for reference.

After you have created a new dictionary or modified an existing one you may press 'E' to return to the basic program. You now are able to save the new or modified dictionary to tape or disk by the appropriate menu selection. When saving the program you will need to supply the name for the updated dictionary. Be aware that using a name that already exists on a disk will write over the old file. Default name used is the same as previously loaded.

One word of caution..When adding words you will be asked if you want to continue the dictionary. Answering 'N' to this prompt will erase all memory reserved for the dictionary. You will be given the chance to confirm your intent.

SSI-263 PHONEMES

<u>PHONEME</u>	<u>HEX</u>	<u>EXAMPLE</u>	<u>PHONEME</u>	<u>HEX</u>	<u>EXAMPLE</u>
A	\$08	dAY	LB	\$3F	Lube
A1	\$09	sAme	LF	\$22	taLL
AE	\$0E	cAd	M	\$37	More
AE1	\$0D	After	N	\$38	NiNe
AH	\$0E	cOt	NG	\$39	raNG
AH1	\$0F	About	O	\$11	stOre
AW	\$10	Office	OO	\$13	lOOK
AY	\$05	mAde	OU	\$12	bOAt
(T.CH)		(CHurCH)	P	\$27	Pen
B	\$24	Bag	PA	\$00	no sound
D	\$25	paiD	(K.W)		(QUick)
E	\$01	mEEt	R	\$1D	Root
E1	\$02	bEfore	R1	\$1E	Rug
E2	\$3E	bittEr	R2	\$1F	mutter
EH	\$0A	nEst	S	\$30	Same
EH1	\$0B	bElt	SCH	\$32	SHow
ER	\$1C	bIrd	T	\$28	TenT
F	\$34	Farm	TH	\$36	THink
(KV.HVC)		Got	THV	\$35	THis
(D.J)		larGe	U	\$16	tUne
HF	\$2C	Help	U1	\$17	sOOn
HFC	\$2D	(k)	UH	\$18	cUt
HN	\$2E	(m,n,ng)	UH1	\$19	lOve
HV	\$2A	(finals)	UH2	\$1A	whAt
HVC	\$2B	(c)	UH3	\$1B	nUt
I	\$07	In	V	\$33	waVe
IE	\$06	manY	W	\$23	Wait
IU	\$14	yOU	(K.S)		miXer
IU1	\$15	cOUld	Y	\$03	wearY
J	\$31	pleaSure	Y1	\$04	Yarc
(D.J)		(JuDGe)	Z	\$2F	glaZe
K	\$29	Kit	(J)		(aZure)
KV (HVC)	\$26	Got	@A	\$3A	Etre **
L	\$20	Laugh	@OH	\$3B	tU **
L1	\$21	fLame	@U	\$3C	fUn- **
			@UG	\$3D	tU **

** Foreign sounds.

SSI-263 REGISTERS

<u>REGISTER NAME</u>	<u>ADDRESS</u>	<u>FUNCTION</u>
Duration/ Phoneme	\$FF80	Lower 6 bits are phoneme code. Upper two bits specify duration and are used for control of SSI-263 modes.
Inflection	\$FF81	Bits 3 through 10 of 12 bit immediate inflection. Bits 3-7 are inflection value in transitioned mode.
Rate / Inflection	\$FF82	Bits 0-3 are remaining bits of imm. inflection Bits 4-7 are rate of speech.
Control / Transition/ Amplitude	\$FF83	Bit 7 controls mode of SSI-263. Bits 4-6 control the rate of articulation transition. Bits 0-3 control the amplitude.
Filter Frequency	\$FF84	8 bit value of vocal tract filter.