

TEXT TO SPEECH

Manual Supplement

The Text To Speech ROM is supplied as a complementary chip to the SPEECH ROM. The TTS ROM is of no use on its own. This document is a supplement to the SPEECH manual, covering the features added by the TTS ROM.

The Computer Concepts SPEECH ROM alone gives speech of high quality, but is relatively difficult to use. Using the SPEECH ROM alone the command required to make it say "BBC Microcomputer" is:

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*UTTER <1> B E B E S E M * I K R O K U H M P Y + 0 0 T U H
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The Text To Speech ROM (TTS ROM) is a driver for the normal SPEECH ROM. It can be given the command:

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*SAY B.B.C. Micro Computer
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and it will work out the appropriate commands to make the SPEECH ROM say the words.

The rules by which text is translated to speech are extremely complicated, and do not always produce exactly the result expected. Unfortunately given a sentence like:

"John took the lead"

it is impossible to decide whether John won a race or stole a piece of metal! The word 'lead' can be pronounced either as 'leed' or 'led'. Even with anomalies such as this, the TTS system produces very acceptable results.

Fitting the ROM

A separate sheet is included which details the fitting of ROM chips. The TTS ROM may have been purchased at the same time as the SPEECH ROM, or as a later add-on. Whichever is

the case, simply plug in both ROMs as described in the ROM Fitting Instructions. The order of the two chips is unimportant. For the BBC B+ the two chips can be supplied as one single 32K chip. This saves on valuable socket space. Computer Concepts are able to supply this single all-in-one chip as a replacement for the two separate chips at a cost of £5.75 incl.

For the speech system to operate at all, the BBC Micro speech processor must be fitted. If this is not already fitted to your machine then one must be purchased. If a speech processor (labelled TMS 5220) was supplied as part of the package, it must be fitted according to the instructions headed 'Speech Processor (TMS 5220) Fitting Instructions'.

Initialisation

Once the speech system is fitted, it has to be initialised before it will work. This is done with the single command:

***TEXON RETURN**

The system will immediately reply with a message instructing the user that **BREAK** must be pressed. There is no need to initialise the SPEECH ROM separately.

TTS Commands

The most useful command provided by the TTS is ***SAY**. It should be followed by plain English words and quite simply causes those words to be spoken. For example, try the command:

***SAY Text to speech RETURN**

All of the commands can be included in BASIC programs, or any other program that allows access to ***** commands. For instance in the Wordwise Plus word processor a footing can contain an embedded command such as:

***SAY change paper!**

***SAY** is the major TTS command, but other commands are provided for flexibility. Instead of just speaking text from BASIC programs etc., it is possible to instruct TTS to speak all words typed at the keyboard, all words sent to the printer, all words on the screen, and so on. In fact, whatever the input or output device (within reason!) TTS can be made to speak accordingly.

The remainder of this supplement describes each of the commands provided by the TTS system. Commands may still be given directly to the SPEECH ROM if necessary, details of which are contained in the SPEECH ROM Instruction Manual.

***TEXON**

As described earlier, this command is used to initialise the entire speech system. The **BREAK** key must be pressed immediately after the command is used. Note that the speech system claims a total of 1K of memory when the ***TEXON** command is issued. **As a consequence, any programs, text, etc. currently in memory will be lost after speech system initialisation.** The ***TEXON** command should therefore be issued before programs etc. are loaded.

***TEXOFF**

This is the reverse of ***TEXON**, serving as a means of disabling the speech system and reclaiming its 1K of memory for other uses. Note that with either ***TEXON** or ***TEXOFF** no action is taken if the system is already in the appropriate state. Pressing **CTRL BREAK** may also be used to disable the speech system.

***SAY <text>**

This is the command used to produce speech directly from command mode or from within a program. Any text string may be entered and the system will make the best sense that it can. For instance some common abbreviations such as "Mr." are spoken in full, symbols are spoken in full and words

containing no vowel are spelt out. Punctuation marks, quotes and brackets are treated differently in different contexts. Some control over interpretation can be exerted with ***SMODE**, ***RMODE** and ***TMODE**.

***PHONS <text>**

This command works identically to ***SAY** but the phonetic translation produced is displayed on the screen. The screen output is exactly the command which would be required to say the given words through the normal SPEECH ROM ***UTTER** command. It is therefore useful for fast development of text for use with just the SPEECH ROM (without TTS). It can also be used for 'tweaking' output from TTS. If the TTS translation is slightly wrong for some reason, the translation can be examined, changed, and output directly through the SPEECH ROM.

***SAYIP**

This is the first of the commands giving access to other sources of input. Following ***SAYIP** an attempt will be made to say whatever is entering via the current 'input stream'; this could be the keyboard or the RS423 port according to which has been selected with the standard ***FX2** command (see the User Guide for details). The BBC micro automatically handles RS423 handshaking so that input slows to accommodate speech. The selection of a new source automatically cancels previous ones ***SAY** and ***PHONS** both cancel the selection of all other sources.

***SAYOP**

This command causes the Text to Speech system to say whatever is entering the 'output stream'. This means, for instance, that machine responses such as "**Syntax error**" are spoken in addition to any input. If a program is listed after ***SAYOP** the listing will be spoken! – so will a disc catalogue following ***CAT**. Remember different source modes are mutually exclusive, each cancels the rest.

***SAYPRT**

In this mode all data going to the printer channel is diverted to the Text to Speech system. No output is actually sent to the printer. Speech can be switched on and off using **CRTL B** and **CTRL C**.

***SAYOFF**

This command can be used at any time to cancel any of the preceding special source modes without enabling another.

***SAYSCR**

This command causes the whole contents of the current screen to be read out. The cursor is returned to the correct position afterwards. The reading can be stopped by using **ESCAPE**.

***SAYFILE <filename>**

The contents of any disc file can be spoken using this command. It is clearly more appropriate for use with text files, but an attempt will be made whatever the file contains. Strange results are obtained with BASIC files as some of the tokenised keywords and line numbers are interpreted as symbols.

***SAYMEM <start> <end>**

This command requires two hexadecimal addresses as parameters. The system will attempt to say whatever data is resident in memory between the two addresses. Once again the output will not make much sense unless this data is text in ASCII format. Note that meaningless data will not crash the system; it will either be interpreted as spaces or symbols.

*SHUTUP

One of the problems encountered by users of the SPEECH ROM is the inability to abort speech which is backed up in the buffer without pressing **BREAK**. This command has precisely the required effect; all speech is immediately terminated and the system reset without affecting any other machine functions. Any speech, whether generated by the Text to Speech system, or by *UTTER, is equally affected. (Note that this command is automatically invoked when *SAYSCR is interrupted with an **ESCAPE**).

*SMODE <N/U/A>

This command, which requires one of the single letter parameters indicated, controls the system choice between pronouncing a whole word or spelling it out letter by letter. The default action, present at initialisation (including Break) or invoked by the N parameter, is to pronounce all words containing at least one vowel; those consisting solely of consonants are spelt out. The parameter U stands for "Uppercase"; in this mode lowercase words are treated normally but uppercase ones are all spelt out. This can be useful with text which contains many uppercase abbreviations not common enough to be recognised by the system as abbreviations. The parameter A, standing for "All", causes the system to spell out all its input. In addition, however, it prevents the system from waiting for a space between words before deciding how to proceed. The net effect is that each character is spoken as soon as it is received. This mode is designed to be used with *SAYIP creating a machine with a 'live' keyboard. In keeping with this intended function the **SPACE**, **RETURN** and **TAB** keys are also spoken.

*RMODE <I/S/F>

This command determines what the system will do on encountering a Carriage Return. I stands for "Ignore" and is self explanatory. This mode is useful for speaking text in which

the words wrap round to the next line. **S** stands for "Space"; in this mode Carriage Returns are interpreted as spaces, useful for instance with right-justified text in which adjacent words at line ends may only be separated by **RETURN**. **F**, the default, stands for "Full stop". In most cases it is most appropriate for the system to assume the end of a sentence at a Carriage Return. Unfortunately in many situations, for example during a screen read, the Carriage Returns are implicit and not present in the text itself; no control is then possible over system behaviour and unwanted effects may occur.

***TMODE <N/W>**

At initialisation or following the parameter **N** (for "Normal") the system assumes the end of a sentence on encountering three consecutive spaces. The parameter **W**, standing for "Wait", prevents this; the system waits for explicit punctuation. This is useful with unjustified text where there may be many spaces at the end of a line, or with widely spaced text. The disadvantage of Wait mode, and the reason for default to the other option, is that if no explicit punctuation is present at the very end of the text the last sentence is not processed and remains in the Text to Speech input buffer. The user may then be surprised by its release when further text is encountered.