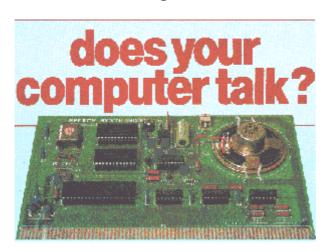# IC Digi Talker

Speech Synthesiser Board

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Data Sheet
SPEECH SYNTHESIZER BOARD

The design of the AML speech synthesis card is based on the national Semi-conductors DIGITALKER system chip set. The card contains a speech processor chip (SPC) and two 64k bit speech ROMs which contain a vocabulary of 256 words and subsounds. Other speech ROMs will be made available in due course. The system produces high quality speech including emphasis of the original speech and natural inflection.

Also included on the card are a 7OOHx and 200Hz filter, power amplifier and loudspeaker and Nasbus interface circuitry. Designed to Nasbus 3 specification, the standard unit can be used with a Nascom 2 as supplied, but an adaptor kit (consisting of 1 Mhz crystal, 2 resistors and 2 capacitors) would be required for a Nascom 1. This is allowed for on the board therefore the system number must be specified on the order.

The systen comprises a speech processor chip (SPC) and speech ROM(s). The system uses speech compression synthesis technieques. This technique dramatically reduces the amount ofmemory required to store speech when compared to other systems such as digitisation, PCM (Pulse Code Modulation) & ADPCM (Adaptive Code Pulse Code Modulation).

National Semiconductors use a computer program to analyse the tape recording and produces a ROM pattern that will synthesize the original recording. During this process the speech waveform is sampled, digitised and compressed by eliminating symmetrical redundancy and silence periods. During the compression algorithm, the voiced and unvoiced sounds are spearated. The signal.is adaptive delta modulated and the phase information

is adjuisted. By using this method speech elements can be synthesized as phonemes or even complete phrases, this data can then be stored on tape, disc or transferred to ROM or EPROM.

In the English language there are between 36 to 40 phonemes (comprising of 14 to 16 vowel sounds and 24 consonants), together with emphasis, inflection, and volume these produce the fundamental building blocks of speech.

To obtain speech from the card, an eight bit word chosen from the master word list is written to Z80 port HEX F6. The word start address is then loaded into the SPC word address register. When the ~WR line goes high, the start address code is loaded into the control word register. The SPC then fetches the control word for the first block of speech date from either 69k ROMs.

The sound output of the SPC is fed to 2 filters and a buffer amplif~er. The first stage is a 7Khz filter. This filter is used to reduce the sampling noise. The second stage is a 200Hz low-pass filter with an attenuation characteristic of 20db per decade.

A 3.5 mm mono jack plus can be connected to JSl. This will turn off the on-board 2.25 inch loudspeaker. Better sound quality can be accomplished if the synthesizer card is connected to a Hi-Fi system or larger loundspeaker.

This product costs 120.00 UKpnds plus 2.99 UKpnds postage and packing and VAT.

Data sheet
Speech Synthesis R5232 Interface

This interface board will allow any microcomputer with a true R5232 output to fully operate the Speech Synthesizer board.

The signal is converted from serial to parallel 8 bit by a 6402 UART.

The Baud rates are selectable between 76 and 9600 and are programmable on a 16 pin DIL header plug.

The board will supply an external clock and a busy signal. The busy signal indicates that the speech card is still talking. The UART and speech card are reset on power up.

The R5232 interface is via a P.C.B. mounting DB25.

The on-board power supply provides + 12v and + 5v and is fully regulated, for both boards. There is power on a LED indicator.

The R5232 interface is supplied in conjunction with the speech board.

Both boards and power supply are housed in a custom designed box and are fully built and tested.

The boxed unit costs 180.00 UKpnds and 4.99 UKpnds pp/VAT.

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