MIDIBox SpeakJet

What is it?

MIDIBox SpeakJet Synthesiser is a project that uses the MagnevationSpeakjet controlled by midibox as a standalone synthesizer.

The SpeakJet IC was brought to market in February 2004, and is available from a variety of vendors for around $25 USD.

From the SpeakJet Web Site:
The SpeakJet is a completely self contained, single chip voice and complex sound synthesizer. It uses a mathematical sound algorithm to control an internal five channel sound synthesizer to generate on-the-fly, unlimited vocabulary speech synthesis and complex sounds.

The SpeakJet is preconfigured with 72 speech elements (allophones), 43 sound effects, and 12 DTMF touch tones. Through the selection of these sounds and in combination with the control of the pitch, rate, bend, and volume parameters, the user has the ability to produce unlimited phrases and sound effects, with thousands of variations, at any time.

The SpeakJet can be controlled simultaneously by logic changes on any one of its eight event input lines, and by a single I/O line from a CPU allowing for both CPU-controlled and standalone operations.

Other features include an internal 64 byte input buffer, internal programmable EEPROM, three programmable outputs, and direct user access to the internal five channel sound synthesizer.

To build this Midi-playable nifty synthesizer project, you will need:

- 1 MBHP Core Module (PIC18F, host of kII speakJet application → see below, communicates via IIC with the SJ-IIC-Module)
- 1 MBHP SpeakJet-ICC-Module (PIC16F, receives IIC commands from Core and communicates via Serial Transmission with the Speakjet → breadboard construction described below)
- 1 2×16 LCD, optional (displays last sent commands and various settings)

The MBHP SpeakJet IIC Module

This project is in progress at the moment. Please visit the Forum (and especially the first SpeakJet thread or see the links below for more info.

- IIC SpeakJet Module [uCApps]

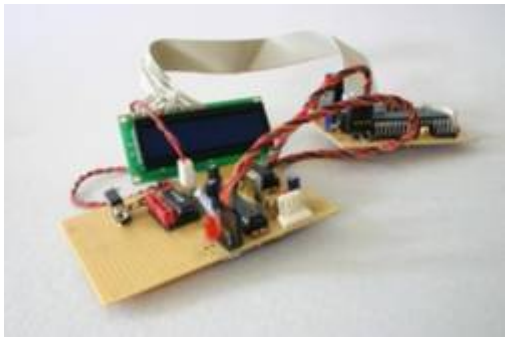
SpeakJet-IIC-Module Breadboard v1.3

- **SpeakJet Breadboard Construction** – Description and How-To of this breadboard construction:
- Breadboard Design with lowPassFilter v1.3 (PDF, 604 kB)
- Breadboard Design with lowPassFilter v1.3 (FreeHandMX sourcefile with a lot of nice electronical symbols, 264 kB)
- Picture Gallery: SpeakJet Breadboard v1.3



Old Version's Archive (don't use these old plans, until you have a reason) :
SpeakJet-IIC-Module Breadboard v1.0

- Preliminary Breadboard with lowPassFilter (PDF, 480 kB)
- Preliminary Breadboard with lowPassFilter (FreeHandMX sourcefile with a lot of nice electronical symbols, 292 kB)
- Picture Gallery: SpeakJet Breadboard v1.0



SpeakJet Application Software

You will the following Software:

- Firmware for the SpeakJet-IIC-Module → download from uCApps.de/mbhp_iic_speakjet.html
- SpeakJet Application Software “kII” for the Core Module → SpeakJet Application Software v 0.1

For Further Information...

- Midibox.org SpeakJet thread

- SpeakJet User Manual / Datasheet
- SpeakJet web site with audio samples (Flash)
- SpeakJet Yahoo Group

- SpeakJet Demo-Mode (mp3)
- SpeakJet Demo - advanced possibilities (mp3, lowQuality, 32kHz, 80kbps, 3.1MB), *shows what is possible with the current state of the project; you can hear how I control the five oscillators and later on mix it with MSA allophones (all from my microKONTROL, so easily controllable by any other midibox 8)*
- Latest SpeakJet Application Demo (kII) (mp3, midQuality, 44.1kHz, 96kbps, mono, 2,28MB), *shows different control examples from phoneme tables controlled by jaw/tongue movement, single OSCs and also my approach to program a subtractive synthesis out of the 5 OSCs... try to hear the different waveshapes and the adding of distortion...*

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