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 LCD, optional (2×16 for kII v 0.1.x; 1×8 LCD for kII v 0.2.x)

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

If you need older outdated circuit versions, see SpeakJet Dev Archive

SpeakJet Application Software

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.

You need the following Software:

- Firmware for the SpeakJet-IIC-Module → download from uCApps.de/mbhp_iic_speakjet.html (v 1.0)
- SpeakJet Application Software “kII” for the Core Module → SpeakJet Application Software v 0.1

– or –

- SpeakJet Application Software “kII” v 0.2 (including updated SJ-IIC-Firmware v 1.2) → SpeakJet Application Software v 0.2
- **Warning: v 0.2 is pre-release BETA-software. Use at your own risk**

SpeakJet Controller Extensions

Currently some optional add-ons are being developed that allow various control of the MBHP-SpeakJet Project. You can add just one of them or all ;)

There are two controller extensions available for the SpeakJet project:

- **HandTracker Sensor Matrix** → from audiocommander, part of the v0.2 release!

- **k64 Keyboard Modul** → from Rio. **Note that an adapted version of the k2 application based on v0.1 is required**. The k64 has some additional synth functions, the original k2 app does not provide atm. Future k2-updates may or may not be compatible with this mod.

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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