VR Stamp™ Programmer
User Manual

With FluentChip™ Technology

SENSORY®

Introduction

Welcome to the VR Stamp™ Toolkit and the world of low-cost, high-performance speech recognition! Based on an industry standard 40 pin DIP footprint, the VR (Voice Recognition) Stamp is a revolutionary new implementation of Sensory's RSC-4128 integrated circuit that will simplify adding speech and recognition to just about any product. The VR Stamp™ Toolkit contains everything necessary (VR Stamp™, VR Stamp Programmer board, speech tools, C Compiler) to program the VR Stamp to your specifications. The VR Stamp Programmer allows you to connect the VR Stamp to a PC for downloading your application after it has been written and compiled. All of the world class technologies included in the FluentChip™ technology library are available with the exception of Record and Play due to memory constraints.

NOTE: The VR Stamp and Programmer are a subset of the Sensory's RSC-4x Demo/Evaluation Board, so it can also be used for VR Stamp development. However, neither the VR Stamp Toolkit nor the RSC-4x Demo/Evaluation Board can be used to develop products using Sensory's RSC-164, 264, 364, Voice Extreme, or SVC families of chips

Overview

The VR Stamp Programmer allows you to:

‣   Program the VR Stamp module
‣   Download an application program from the PC to the VR Stamp
‣   Demo key speech technologies
‣   Develop the applications

Additional Resources

For the VR Stamp schematic, refer to: 70-0066-x
For the VR Stamp Programmer board schematic, refer to: 70-0069-x
For the VR Stamp sample schematic, refer to: 70-0070-x

Programming the VR Stamp

The VR Stamp Programmer allows you to prepare the VR Stamp for use in your electronic product. You can download an application program from a PC, and once the application program is installed on the VR Stamp, you can unplug and install it into your product.

USB Driver
Important: The VR Stamp Programmer uses the Future Technology Devices Intl's FT232BM USB UART. You should have already installed the USB driver per the Quick Start Guide when the VR Stamp Programmer board was connected to the PC. If necessary, updated drivers and documentation can be found on the Future Technology Devices Intl's website at www.ftdichip.com.

For selecting the COM port, please refer to "USB Driver COM Port Instructions".

Maximum Baud Rate
Currently the maximum baud rate for programming VR Stamp is 57600.

"Sensory Quick T2SI" and "Sensory Quick Synthesis 4"
Both Quick T2SI and Quick Synthesis 4 GUIs require that you set the COM port. To set the COM port for Quick T2SI, refer to "QuickStartGuide.chm." For Quick Synthesis 4, refer to "QuickSynthesis4.chm."

Matching COM Port
The COM port you select for VCP Driver must match the COM port you select for Sensory Loader 4, Quick T2SI and Quick Synthesis 4 GUIs.

If you have not done so already, Set Up the VR Stamp Programmer
▸   Select the ON/OFF switch to OFF position.
▸   Select the RUN/DOWNLOAD switch to DOWNLOAD.
▸   Connect a wall mount power supply rated at 9VDC to the VR Stamp programmer.
▸   Connect a USB cable between the PC and the VR Stamp programmer. Drivers may need to be installed and are located on this CD.
▸   Place the VR Stamp in the ZIF socket.
▸   To download, select RUN/DOWNLOAD switch to DOWNLOAD, select the ON/OFF switch to ON position, and then run "Sensory Loader4".

Demo Programs
Download the demo binary or hex file to the programmer board using the Sensory Loader 4 application. The demo programs are included in the VR Stamp Toolkit CD. For instructions, refer to their individual readme files.
The demo programs are written to run on VR Stamp and RSC-4x Demo/Evaluation Board (60-0208-x). You need to wire the switches to the VR Stamp Programmer board. For the connections, refer to the VR Stamp reference schematic, 70-0070-x.

Sample Programs
Most of the sample programs included with the FluentChip technology library can be downloaded and evaluated with the VR Stamp. Please refer to the "VR Stamp with Serial EEPROM SR Module Data Sheet" for the complete list of supported samples.

Running VR Stamp Applications on the VR Stamp Programmer

For a quick development with the VR Stamp, we provided the following features in the programmer.
▸   Through holes for all IO pins
▸   RUN/DOWNLOAD switch
▸   Audio jacks for PWM and DAC outputs
▸   On-board microphone
▸   Header for the external microphone connection

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▸   Connect a USB cable between the PC and the VR Stamp programmer. Drivers may need to be installed and are located on this CD.
▸   Place the VR Stamp in the ZIF socket.
▸   To download, select RUN/DOWNLOAD switch to DOWNLOAD, select the ON/OFF switch to ON position, and then run "Sensory Loader4".

Microphone
VR Stamp Programmer is designed so that you can use the on-board or external (custom) microphone.

To use the on-board microphone, put the jumper as listed below:
▸   JP3: 2-3

To use the external microphone, connect an external microphone to JP2, and put the jumper as listed below:
▸   JP3: 1-3

To use the external microphone, you need to install the microphone source resistor. To select the resistor, refer to
▸   "Design Note - Selecting a Microphone", 80-0259-x.

Audio Outputs
PWM output is routed to the audio jack (J3) and though holes (JP1). You can connect the speaker to J3 or JP1.

The optional audio output for the amplified DAC out is also provided at J5 and JP7. Please note that although the VR Stamp has the DAC output, the signal is not amplified in the VR Stamp. The DAC output signal is amplified on VR Stamp Programmer for your convenience. Adjust R20 for the volume.

LEDs and Switches
You can wire LEDs and switches to J4 such that it is compatible with the RSC-4x Demo/Evaluation board. The necessary connections are shown in the VR Stamp reference schematic, 70-0070-x.

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The Interactive Speech™ Product Line

The Interactive Speech line of ICs and software was developed to "bring life to products" through advanced speech recognition and audio technologies. The Interactive Speech Product Line is designed for consumer telephony products and cost-sensitive consumer electronic applications such as home electronics, personal security, and personal communication. The product line includes the award-winning RSC-4x general-purpose microcontrollers and tools, the SVC line of speaker verification chips, the SC series of speech and music synthesis microcontrollers, and our suite of software development kits designed to run on non-Sensory processors and DSP's supporting most popular operating systems.

RSC Microcontrollers and Tools

The RSC product line contains low-cost 8-bit speech-optimized microcontrollers designed for use in consumer electronics. All members of the RSC family are fully integrated and include A/D, pre-amplifier, D/A, ROM, and RAM circuitry. The RSC family can perform a full range of speech/audio functions including speech recognition, speaker verification, speech and music synthesis, and voice record/playback. The family is supported by a complete suite of evaluation tools and development kits.

SVC Microcontrollers and Tools

The SVC product line combines text-dependent speaker verification password biometrics with low-cost 8-bit microcontrollers designed for use in consumer electronics. All members of the SVC family are fully integrated for speech applications and include A/D, pre-amplifier, D/A, ROM, and RAM circuitry. The SVC family performs noise robust speaker verification password security functions and speech synthesis. The family is supported by a complete suite of evaluation tools and development kits.

SC Microcontrollers and Tools

The SC-6x product line features the highest quality speech synthesis ICs at the lowest data rate in the industry. The line includes a 12.32 MIPS processor for high-quality low data-rate speech compression and MIDI music synthesis, with plenty of power left over for other processor and control functions. Members of the SC-6x line can store as much as 37 minutes of speech on chip and include as much as 64 I/O pins for external interfacing. Integrating this broad range of features onto a single chip enables developers to create products with high quality, long duration speech at very competitive price points.

FluentSoft™ Technology

FluentSoft™ Recognizer is the engine powering the FluentSoft™ SDK. It provides noise and echo cancellation, performs word spotting for natural language usage; offers telephone barge-in; and provides continuous digit recognition. This small footprint software recognizes up to 50,000 words, runs on non-Sensory processors including Intel XScale and ARM9 platforms, and supports operating systems such as Windows and Linux.

FluentSoft™ Animation Toolbox offers animated avatars with advanced speech recognition and synthesis capabilities for use in Smart Phones and Kiosk applications. Facial expressions can be configured for different emotions, and the technology offers text-to-speech synthesis in either male or female voices.

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