MICRO-MIDI CONTROL SYSTEM
AND
SOFTWARE SOUND ENGINE

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Instruments, Inc.

Software Sound Engine

General Facts:

Running Platform: Linux Ubuntu 5.1 running on PC (i386) or Mac (ppc)

Input mode: General Midi with less than 4ms latency via Soundblaster Live hardware port or USB midi device.

Total Polyphony per engine: Memory dependent but more than 2060 notes at 512MB

Audio Output: 2 channel stereo or 2 discrete mono channels per engine soon to be 6 channels.

Maximum ranks per engine: Memory dependent. Approximately 6 ranks per 512MB of full length unified ranks.

Sound file types: Artisan .arnk files
        *.wav files, *aif.files may be played as long as Artisan has authorized them in advance. All sound files MUST be note by note samples. The Artisan sound engine was not designed to stretch samples over a range of notes thereby forcing the absolute best quality sampled ranks possible.

Sample Rates supported: 16 bit, 24 bit, 48 bit, 64 bit @ 44100 or 48000 mono or stereo.

Tremulants: 2 types available for most ranks
        1. Full sampled pipe organ tremulants note by note.
        2. Variable rate and depth digital tremulants adjustable rank by rank.

Tuning: Adjustable by note, by rank, and by entire sound engine unit.

Volume Control: Adjustable by note, by rank, and by entire division.

Swell Shades: Stepped or Linear available divided by chamber or by sound engine unit. Accepted input is midi controller information sent on any channel, any controller number.

Division information is received per midi channel (user definable).

Stop information is received per midi note on specified channel (user definable).

Expression Shades (volume) and Crescendo is received per midi controller (user definable).

Special Features:

1. Full Standard Couplers
2. Mutation (trick) Couplers (5 1/3, 6 2/5 etc.)
3. Melody Couplers (solo melody)
4. Bass Couplers (countermelody) (automatic bass)
5. Reversible Couplers
6. Variable Length Divisions
7. Pseudo Divisions for non coupling devices
8. Standard Stops
9. Fully Unified Stops
10. All Unification Mutation Pitches Accepted
11. Melody Stops
12. Bass Stops
13. Variable Rate Reiteration Stops (low rate and high rate)
14. Variable Time Pizzicato Stops (low speed and high speed)
15. Single Note Traps from divisions
16. Multiple Note Traps from divisions
17. Single Note Traps from toe studs or pistons
18. Variable Rate reiteration traps
19. Downbeat and Upbeat traps
20. Accommodates fully looped samples as well as full length percussive samples.
21. Settable sample release rate and loop rate. (settable damper)
22. Touch sensitive ranks (i.e. Piano) fully supported.

23. Celeste tuned ranks supported. Adjustable celeste speed via tuning by note or by rank.
24. Audio channel settable rank by rank.
25. Tremulants assigned rank by rank.
26. Voicing can be done note by note or rank by rank.

General Advantages Over Other Software Sound Engines

1. The operating platform is far more stable than Windows.

2. The program is designed to stay running indefinitely without hindrance from Windows routines running in the background and it does not continually fragment files and then have to defragment them again.

3. It does not depend on the Microsoft Java sound processing software to get things to the sound card.

4. You don't have to pay for an operating system on top of the sound engine software.

5. The program is not bogged down with latency because of the user interface nor the way Windows handles programs. Since it is a professional level program we have not included a lot of cutesy graphical interface dials and switches. The throughput is far more direct.

6. No processing time is taken up with console functions like combination action, alterable stops etc.

7. Includes full flexible couplers, unification, pizz, reit, melody and bass couplers without hindering processing time.

8. Frees up far more memory available for sound files rather than having so much memory taken up by the operating system itself in RAM.

9. Does not require a screen, keyboard, mouse etc. after programming and voicing is complete.

10. Is made specifically to marry to the Artisan uMidi system.

11. Far easier to create organs and write configuration files.

12. Handles sampled tremulants with ease

13. Also contains variable rate and depth tremulants for any rank which does not have a sampled trem.

14. Handles floating division and ranks beautifully.

15. Does not relay on anything within the sound card except the pass through pre-amp making it possible to use far less expensive sound cards with excellent results.

16. Handles trick features as couplers or as stops as desired by the programmer.

17. Did I say HAS NO LATENCY? Well actually of course all software has some latency but with an organ containing 56 ranks divided on two sound engines and highly unified we measured (with a scope) around 2 to 3ms with all stops and couplers on. This is really unperceivable from a playing standpoint and if you've tried loading much into Hauptwerk or Gigasampler you'll see the difference immediately. For comparison, a mechanical relay in a pipe organ is between 5 and 6ms. A Hammond is 2ms. The commercial industry standard for digital organ relays required by the American Organ Industry Council is 10ms. Depending on the processing power of the computer and the speed of the processor, how many ranks are loaded and at what volume those ranks are set to play, Hauptwerk and others can easily get up into the 26 to 48ms (or even higher) range.

18. Artisan Sound Engines can be daisy chained eliminating the need for splitting the midi line since all *relay functions are performed in the sound engine itself. the uMidi system is only required to pass along keyboard and stop input information. No couplers nor *relay functions are done by uMidi.

For more information please contact Artisan Instruments, Inc.
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