

**EXHIBIT 27**

# ASR

ADVANCED SAMPLING RECORDER



**ENSONIQ has been at the forefront of sampling since the early 1980's** with the development of the groundbreaking Mirage Digital Sampler. The EPS continued that path of innovation with a combination of sampling, sequencing and expressive performance features. The EPS-16 PLUS brought the sampling workstation into the 90's with improved fidelity, onboard effects processing (*a first for a sampler!*) and advanced SCSI functionality.

With the new ASR-10 Advanced Sampling Recorder keyboard and rack, ENSONIQ again brings innovation to the world of sampling. The ASR-10 combines the performance flexibility that ENSONIQ is known for with the features that our users have asked for, and some new ideas of our own.

The ASR-10 is based on a new, custom oscillator chip that gives you up to 31-note polyphony, and hardware envelopes for a significant improvement in sound fidelity. Best of all, the ASR-10 can support up to

16 Megabytes of sample memory — 8 times the memory of our previous sampler. The ASR-10 comes standard with 2 Megabytes of sample memory, and uses industry-standard SIMMs for easy expansion.

The ASR-10 can sample in stereo or mono and features unique "Layer-Link" editing for easy control over stereo samples. With an extensive voice architecture the ASR-10 is a powerful sound-creating tool, rivaling any synthesizer available. Its 24-bit effects capabilities include 50 algorithms, many derived from our DP/4 Parallel Effects Processor. You can also route input sampling through the effects processor, resample through the effects and even process external signals while you play live or play back sequences.

The ASR-10 has a Quad-density (HD) disk drive for increased storage capacity and faster load times. Add the optional SP-3 SCSI interface (*standard on the rack*) and you can hook up to 7 different hard disks and CD-ROM drives for fast access

to your library of sounds. All controlled by a powerful SCSI implementation with macros for instant access to any location on any device, and Backup and Restore commands to optimize your drive's performance. To help build your library the ASR-10 is compatible with sounds developed for the EPS and EPS-16 PLUS samplers, giving you the best sample library available.

Couple these features with a flexible 16-track sequencer, Poly-Key™ Pressure keyboard and Performance Presets (*for instant recall of 8 possible sound combinations with split and layer capabilities*) and you have a sampler that was designed to make expressive music. The ASR-10 Advanced Sampling Recorder, the next-generation sampler that could only come from the innovators in sampling — ENSONIQ.

**ensoniq®**

THE TECHNOLOGY THAT PERFORMS

**Keyboard**

- 61-key (C-C) weighted synth-action Poly-Key™ (polyphonic aftertouch) keyboard with programmable velocity and pressure sensitivity \*

**Controllers**

- Exclusive Patch Select Buttons for instant access to 4 different sound variations within each Instrument \*
- Pitch and Mod wheels \*
- Programmable Foot Switch (SW-2, optional SW-10)
- Dedicated Foot Switch for use as Patch Select controller (with optional SW-10)
- Mod/Volume pedal (optional CVP-1)

**Internal Memory**

- 2 Megabyte internal RAM (1 Megaword - 16-bit format)
- Expandable to 16 Megabytes (8 Megaword - 16-bit format) internal RAM with standard SIMMs (non-parity only)

**Sampling**

- True 16-bit linear sampling utilizing 64x oversampling Sigma-Delta (one-bit) technology
- Stereo or Mono sampling available
- 2 Sample rates - 44.1 kHz, 29.76 kHz
- Maximum sample times:
  - Standard Memory (2 Megabytes / 1 Megaword): 20.5 sec @ 44.1 kHz mono, 10.3 sec @ 44.1 kHz stereo, 30.3 sec @ 29.76 kHz mono, 15.2 sec @ 29.76 kHz stereo
  - Fully expanded (16 Megabytes / 8 Megaword): 183 sec (3 minutes) @ 44.1 kHz mono, 91.5 sec (1.5 minutes) @ 44.1 kHz stereo, 271.4 sec (4.5 minutes) @ 29.76 kHz mono, 135.7 sec (2.3 minutes) @ 29.76 kHz stereo
- Dedicated stereo audio input preamp with hardware mic/line switch\* and input level trim control
- Individual Signal and Peak LEDs for each channel
- Programmable pre-trigger time of up to 140 ms
- No minimum or maximum size for Instruments (within the limits of available memory)
- Expert System Autolooping
- Wide variety of Digital Signal Processing commands, including:
  - wavesample copy, truncate, mix, merge, splice, convert sample rate, volume smoothing, gain normalize, fade in, fade out, 5 kinds of cross-fade loop (with the ability to audition most of these edits)
- Time compression/expansion function (non-real time) with compression up to 1/2 the original time, or expansion up to 2 1/2 times the original wavesample length
- Sampling (stereo or mono) through the effects processor
- Real time stereo resampling (also through the effects processor) of notes played on keyboard, played by the sequencer or received via MIDI

**Playback**

- Frequency response: 2 Hz - 20kHz ± 1.5 dB @44.1 kHz
- 94 dB signal-to-noise, 96 dB dynamic range, 94 dB THD + noise (< .002%) at unity playback
- 2 playback modes:
  - 31 voices at 29.76 kHz playback rate for 14.8 kHz frequency response
  - 23 voices at 44.1 kHz playback rate for 20 kHz frequency response
- Compatible with all existing EPS-16 PLUS/EPS libraries

**Voice Architecture**

- 31 voices dynamically assigned
- Instant selection of alternate samples with exclusive Patch Select buttons, velocity, or legato playing
- Each Instrument can contain up to 127 wavesamples
- Each individual wavesample has a complete set of program parameters including:
  - 2 independent multi-mode dynamic digital filters (low pass, high pass, variable bandwidth band pass)
  - pitch, filter and amplitude envelopes (5-stages with 21 parameters per envelope), with velocity interpolation between Soft and Hard Envelope levels
  - 14 preset envelope templates for ease of programming
  - 1 multi-waveform LFO with delay
  - Variable rate random Noise generator for modulation
  - 15 modulation sources routable to pitch, filter cutoff, volume, pan, loop parameters, LFO depth or rate, and all effects parameters
  - 4 different mono modes possible (Legato, Pedal, Trigger, Minimode)

- Real time modulation of loop start, loop end, loop position, and wave start index from any of the 15 mod sources
- Transwave™ loop modulation for constructing unique spectral interpolation waveforms
- Each wavesample can be individually panned and assigned to one of six stereo busses (with optional OEX-6sr output expander) \*\*

- Wavesamples are organized into Layers, which map groups of wavesamples across the keyboard
- Each Instrument can contain up to 8 Layers, which can be cross-switched by velocity, and crossfaded at any number of points by the keyboard, pressure, velocity, or any other modulator
- Layers can be delayed up to 5 seconds, with delay modulated by velocity
- Fully programmable pitch tables with 1 cent resolution and extrapolation capability

**Performance Preset Parameters**

- Double-click to Stack up to 8 Instruments, with key split possibilities
- The combination of up to 8 Instruments with special performance parameters can be stored as a Performance Preset
- Performance parameters include Mix, Pan, Output Bus, Key Range, Transpose, Patch Select Status, Pressure Mode, Effect Control, MIDI Out Channel, Program Change and MIDI Status
- A Bank contains up to 8 Instruments, 8 Performance Presets, a global effect and all of the current Sequencer memory (including the Song)
- Banks can call up the needed Instruments from different floppy disks, directories on a SCSI device, or even different SCSI devices

**Effects**

- Custom VLSI 24-bit digital signal processor (ESP Chip) with 48-bit accumulation
- Programmable stereo multi-effects processing with real time modulation of any effects parameter
- 50 algorithms
- 4 programmable variations per effect
- 6 Stereo busses for dry, individual or grouped effects processing, and routing to optional OEX-6sr output expander \*\*
- Audio Tracks allow the routing of external signals through the effects for sample input monitoring, or live performance (external signal can be merged with on-board sound generation keyboard, sequencer or MIDI)
- Each Audio Track has its own Mix level, Pan and Output Bus routing, with instant muting

**Sequencer**

- 8 polyphonic tracks, each with its own Instrument, Volume, Mix, Pan, Output Bus and MIDI channel
- 8 additional "Song Tracks" permit recording of song-length tracks once Sequences are assembled into a Song, for virtual 16-track recording
- Tracks can play internal voices and/or external MIDI instruments
- Up to 80 Sequences (sample memory permitting)
- Song form provides up to 99 Steps with up to 63 Repetitions for each Step (each Sequence Track in a Step can be individually muted and/or transposed)
- Sequence size limited only by internal memory (up to 320,000 notes standard, up to 2,560,000 notes possible with 16 Megabyte - sample memory permitting)
- Clock resolution of 96 PPQ, synchronized to Internal or MIDI clock source
- 3 real time recording modes (Replace, Add, Looped) and Multi-track recording
- Up to 31 internal voices per Track, dynamically assigned (no limit on MIDI voices per track)
- Post-quantization (auto-correct to 1/64 note triplets)
- Step editing, transposition, clock-shifting, append, change length, track merge, event scaling and filtering commands
- Auto-locate controls (Bar/Beat accuracy), adjustable click track and Tap Tempo control
- MIDI Auto Mix automated mixdown feature records all volume/panning changes for each Track

**MIDI**

- Poly, Omni, Multi, Mono A and B modes supported
- Multi-timbral, accommodating up to 8 simultaneous polyphonic MIDI channels

- MIDI Local On/Off per Instrument allows up to 8 outbound MIDI keyboard zones for master controller applications
- Global controllers in Mono mode for use with MIDI guitar and alternate controllers
- MIDI Song Position Pointer and Song Select supported
- XCTRL allows any inbound MIDI controller (0-127) to be used as a modulator

**Disk**

- 1.4 Megabyte Quad-density (HD) 3.5" micro-floppy (also reads/writes Double-density (DD) disks)
- DMA (Direct Memory Access) for "Play While Load" capability
- Save MIDI System Exclusive dumps from any MIDI device to disk (up to 1.4 Megabytes standard / 16 Megabytes fully expanded - to SCSI device only)
- Optional SCSI connection (SP-3) allows hook up to hard disks (up to 5 Gigabytes) or CD-ROM players with "direct dialing" of any sound on the storage device
- User definable macros for instant access to any directory within a SCSI device, or to instantly change SCSI devices
- SCSI features include access up to 7 devices, copy SCSI device, and Backup/Restore utilities

**Inputs/Outputs**

- Left/Mono and Right/Mono audio outputs
- Headphone jack
- Pedal/Control Voltage input (allows modulation of voices or volume control with optional CVP-1 pedal)
- 2 single/dual pedal inputs (SW-2, optional SW-10)
- Stereo audio inputs (switchable between mic and line level\*)
- Audio input level trim control
- MIDI IN/OUT/THRU
- Connectors for optional DI-10 Digital I/O board

**Display/Panel**

- 22 character alphanumeric display with 29 dedicated mode indicator fields
- 38 front panel buttons, 10 with dual LED indicators\*\*\*
- Dedicated Data Entry and Volume sliders

**Standard Accessories**

- Tutorial Manual (with examples provided on O.S. disk)
- Musician's Manual
- Essential Sound Manual
- Current Operating System disk
- 8 Essential sound disks
- SW-2 Foot Switch\*
- Detachable power cord

**Optional Accessories**

- Additional sound disks (AS Series (5 disks per set), Signature Series (3 disks per set), SL Series (5 disks per set), SLT-1 thru 13 (10 disks per set)), CD ROMs (CDR Series)
- SW-10 Dual Foot Switch - 2 pedal piano damper for sustain, Patch Select and sequencer control
- CVP-1 (CV Pedal) - for voice modulation or volume control
- OEX-6sr output expander provides 3 additional pairs of stereo outputs or 6 mono outputs \*\*
- SP-3 SCSI interface with opto-isolation for noise elimination\*\*
- DI-10 Digital I/O board (S/PDIF digital interface)

**Physical**

- Keyboard dimensions: 40 3/8" (102.55cm) wide x 4" (10.16cm) high x 14 1/2" (36.83cm) deep
- Keyboard weight: 40 pounds (18.16 kilograms)
- Rack dimensions: 17" (43.2cm) wide x 5 1/4" (13.3cm) high x 15" (38.1cm) deep
- Rack weight: 23 pounds (10.43 kilograms)

**Limited Warranty**

- One year parts and labor

- \* Keyboard version only
- \*\* Rack comes standard with additional outputs and SCSI interface
- \*\*\* Rack has 8 single bi-color and 2 dual LEDs

Prices and specifications subject to change without notice

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THE TECHNOLOGY THAT PERFORMS

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