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**MOTU ANNOUNCES 2408 HARD DISK RECORDING SYSTEM FOR MAC & PC UNDER \$1,000**

**MARK OF THE UNICORN 2408 HARD DISK RECORDING SYSTEM OFFERS 24  
SIMULTANEOUS INPUTS AND OUTPUTS FOR MAC OS AND WINDOWS FOR UNDER \$1,000**

**MARK OF THE UNICORN ANNOUNCES HARD DISK RECORDING SYSTEM WITH 24 CHANNELS  
OF I/O, EXPANSION TO 72 CHANNELS, AND REAL TIME FX FOR UNDER \$1,000**

NAMM, LOS ANGELES, CA - January 28, 1998. Mark of the Unicorn, Inc. (MOTU) previewed the 2408, a computer-based hard disk recording system for Mac OS and Windows that offers 24 simultaneous inputs and outputs at a street price of just under \$1,000. The system consists of a PCI card connected to a standard 19-inch, single-space, rack-mountable I/O unit. The external I/O unit offers three Alesis ADAT 'light pipe' connectors (24 channels of ADAT optical I/O), three Tascam TDIF connectors (24 channels of Tascam digital I/O), eight unbalanced RCA analog inputs, eight unbalanced RCA analog outputs, one stereo S/PDIF input, two stereo S/PDIF outputs, and two balanced (+4 dB) quarter-inch TRS main outputs. Up to three 2408 I/O units can be connected to the system's single PCI card for a maximum of 72 input and output connections. The system includes full-featured audio workstation software for Mac OS that supports both 16-bit and 24-bit recording. For Windows, a driver is included for compatibility with audio applications that support standard multi-channel Windows Wave drivers.

"We consider the 2408 to be the next major breakthrough in computer-based hard disk recording systems," says Jim Cooper, Marketing Director at Mark of the Unicorn. "It offers much more I/O than any other system at this price point, and it offers many high-end features found in systems costing thousands of dollars, like real time effects processing, 24-bit recording, and sample-accurate synchronization with ADAT and Tascam. For anyone looking to buy a hard disk recording system for their PC or Mac, no other system even comes close to this feature set at this price."

### **The 2408 I/O Rear Panel:**

#### **24 simultaneous inputs and outputs, 20-bit converters**

The 2408 I/O is a single-space, rack mountable chassis with gold-plated analog and digital audio connectors on its rear panel and status LEDs on the front. The rear panel has seven banks of 8-channel I/O in the following formats:

- One bank of 8 unbalanced (-10 dB) analog RCA inputs and outputs.
- Three Tascam DA-88 'TDIF' 8-channel digital I/O connectors.
- Three Alesis ADAT optical 'light pipe' 8-channel digital I/O connectors.

Internally, the 2408 has three 8-channel I/O busses (A, B and C) for a total of 24 simultaneous inputs and outputs. Using the included console software (available for both Mac and PC), users can freely choose any I/O format for each bank. For example, the user could choose analog for Bank A, ADAT optical for Bank B, and Tascam TDIF for Bank C. Or they could choose ADAT optical for all three banks.

The analog inputs are equipped with 20-bit, 64x oversampling A/D converters. The analog outputs have 20-bit 128x oversampling D/A converters. The entire analog section of the circuit board inside the 2408 is physically isolated from the rest of the board to help ensure quiet analog performance.

For main stereo output, analog outputs 1 and 2 are duplicated on the rear panel as a stereo pair of balanced (+4 dB) quarter-inch TRS jacks.

The 2408 rear panel has three S/PDIF stereo pairs. One S/PDIF output, labeled 'DAT', is dedicated to duplicating the stereo main out so that users can always record a stereo mix to their DAT decks without swapping cables with other S/PDIF devices. The other two S/PDIF connectors, labeled 'AUX', serve as independent stereo inputs/outputs.

BNC Word clock connectors (in and out) are provided for synchronization with standard word clock devices. Sample-accurate ADAT and Tascam synchronization is provided via the PCI card (explained later).

### **The 2408 I/O Front Panel:**

#### **Level Meters, Headphone Output and Stand-alone Format Conversion**

The front panel of the 2408 I/O displays several banks of status LEDs. On the left are three banks of eight LEDs (A, B and C) that show audio signal on the 2408's three ADAT/TDIF digital I/O buses. On the right are eight vertical, four-segment LEDs that show input level from the eight analog inputs measured from -40 dB to 0 dB. Eight analog output LEDs are provided as well.

Finally, several additional LEDs, along with accompanying mode/select buttons, allow users to access the 2408 I/O's stand-alone format conversion features. With these controls, users can bounce ADAT tracks to Tascam and vice versa without a computer.

The 2408 front panel includes a quarter-inch stereo headphone output jack and volume knob. The headphone output matches the main stereo outs.

### **The PCI-324 card:**

#### **Custom Processor, Expansion, and Sample-accurate Sync**

The 2408 system ships with a single PCI audio card called the PCI-324. The card features a custom processor, three 1394 'firewire' type connectors, an ADAT SYNC IN connector, and a Digital Timepiece 'Control Track' sync connector (RS-422 socket).

The firewire connectors allow up to three 2408 I/O units to be connected at one time, providing users with 72 input and output connections. The 2408 system uses standard 1394 components, but MOTU has developed a proprietary communication protocol between the card and the external I/O to handle the extremely low latencies required by the system. The heart of the PCI-324 card is a custom-programmed VLSI chip capable of simultaneously processing all 72 inputs and outputs (144 channels total) at either 44.1 or 48 KHz. The custom chip handles all of the system's I/O processing, freeing up the host computer's processing bandwidth for real-time DSP effects and hard disk I/O. The custom processor also allows the system to act as a massive, 72 by 72 patch bay, allowing users to route any input to any output (or combination of outputs).

The card's standard 9-pin ADAT SYNC IN connector provides sample-accurate synchronization with all Alesis ADAT tape decks connected to the system. For example, if a user digitally transfers a single track of material from their ADAT via light pipe into the 2408's Macintosh workstation software, and then transfers the track back to the ADAT, it will be recorded exactly at its original location.

The card's RS-422 Control Track connector allows sample-accurate synchronization with MOTU's Digital Timepiece universal A/V synchronizer. For example, Tascam DA-38/88/98 users can use a Digital Timepiece to synchronize their 2408 system with Tascam tape decks to perform sample-accurate transfers in the same manner as just described for ADATs. Control Track is a proprietary, sample-accurate digital audio synchronization protocol developed by Mark of the Unicorn.

### **16-bit and 24-bit recording**

While the 2408's on-board A/D and D/A converters are 20-bit, the 2408 system handles the data internally with a 24-bit signal path. Using the Macintosh workstation software (included), users can record 16-bit or

24-bit audio files at either 44.1 or 48 KHz. On Windows, 24-bit audio files can be recorded with any compatible host application that has the ability to record them.

users can achieve 24-bit A/D and D/A conversion via third-party products. For example, users can connect an Apogee AD-8000 8-channel 24-bit converter to their 2408 system via an ADAT optical connection for 8 channels of ultra high-fidelity 24-bit recording.

### **Macintosh Audio Workstation Software: Recording, Editing, Mixing, Plug-ins and Real-Time Effects**

Included with the 2408 system is a full-featured audio workstation software package that includes multi-channel waveform editing, automated virtual mixing, graphic editing of ramp automation, real-time effects plug-ins with 32-bit floating point processing, crossfades, support for third-party audio plug-ins (in the MOTU Audio System and Adobe Premiere formats), background processing of file-based operations, sample-accurate editing and placement of audio, and more. The 2408 system can also be used with MOTU's award-winning Digital Performer audio sequencer software package.

In either case, the host computer determines the number of tracks that the software can record and play simultaneously, as well as the amount of real-time effects processing it can support. A faster computer with more RAM and faster hard drives will allow more simultaneous tracks and real-time effects than a slower computer with less RAM and slower hard drives. A 200+ MHz Power Macintosh will allow the software to play 16-24 simultaneous tracks of audio. Today's fastest computers can typically play as many as 32 tracks or more. Standard third-party SCSI acceleration products can also help users achieve higher track counts.

### **Compatibility with Third-Party Audio Software**

The 2408 system ships with a standard multi-channel Windows Wave (.WAV) driver that allows users to record, edit, play back and mix their 2408 projects using their favorite Wave-compatible Windows software.

The 2408 system also ships with a standard Mac OS Sound Manager driver for stereo I/O with any audio application that supports Sound Manager.

### **Price and Availability**

The 2408 is expected to ship in Q1 1998. Price is \$995.

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