An Introduction to MIDI

What MIDI Is

Say you're a musician. You have a few electronic instruments of various types from different manufacturers. You write a multi-part composition, but no one's around to play it with you, so you hook up your computer to your electronic instruments, play the different parts on the various instruments to record them. Then you sit back and listen while every instrument in the house plays your new song.

You've been using MIDI.

"The Musical Instrument Digital Interface (MIDI) is a hardware and software specification for digital data communication between musical instruments, recording and effects devices, and computers."* In other words, it is a standard for Input/Output (I/O). MIDI is a standard that, if incorporated into a device, allows it to "talk" to any other device that has MIDI. It consists of some interface circuitry and an electronic "grammar" to carry information between instruments.

The MIDI specification was proposed to solve the problem of instrument compatiblity. The idea of a standard was agreed at a conference of 11 manufacturers in January of 1982. MIDI was made public in an October 1982 issue of *Keyboard* magazine. The first keyboard that included MIDI, a Sequential Circuits Inc. Prophet 600, was shipped in December of 1983. Before MIDI, electronic instruments from different manufacturers were developed along different lines. It was difficult if not impossible to connect two different brands of keyboards. With MIDI, it is easy. Using two DIN 5-pin cables (180 degree), connect the port labeled "MIDI OUT" on the keyboard you want to play (called the master) to the port labeled "MIDI IN" on the keyboard (called the slave), and vice versa (some instruments have a "MIDI THRU" jack). That's it. The notes you play on one keyboard will come out of both instruments.

Here are some technical specifications of the MIDI interface:

The interface is serial (like RS-232). This means that it uses only one cable to transmit data, as opposed to a parallel interface, which uses eight. It operates at a speed of 31.25 kBaud (31,250 bits per second), asynchronous. The MIDI controller can assign up to 16 channels. Each channel can control one and only one instrument or voice on an instrument. This means that a maximum of 16 instruments can be connected to a controller, if each instrument only has or uses one voice.

This new standard is causing a lot of excitement among music professionals. "MIDI is to musical instruments what RS/232 was to the computer. It's a serial connection that allows them to communicate" said Bob Moore, president of Hybrid Arts, which produces MIDIMATE, an interface and software package that works with any Atari 8-bit machine (such as the 600, 800, and 65XE) with 48k. Moore, who is a professional recording engineer and musician, is enthusiastic about the future of MIDI. "MIDI is a new industry that will put music in every home." Whether or not MIDI becomes that popular remains to be seen, but many manufacturers are equipping their instruments with MIDI. Some of these companies are Sequential Circuits, Inc., Roland, Yamaha, Kawai, Casio, Seiko, PPG, Ensonic, Oberheim, and Korg.

MIDI is not yet a perfect method of communications between instruments, however. According to Jim Parry, manager of audio systems development at Atari, MIDI packages from different manufacturers handle advanced features (such as tone-bending) differently, so that when connected through MIDI, the full capabilities of each instrument are not realized. "They can communicate, but their capabilities are a subset of each" he said. Parry also said that these problems should clear up in time, as the standard is defined.

The MIDI standard is not confined to instruments. Computers can incorporate MIDI also. This opens up a whole range of possible uses. The computer can store music on disks. Instruction disks can be made which play a song, record the students attempt, then play both together. Most exciting of all, the computer can perform the same function as a multi-track recorder by storing the digital signals sent to it by MIDI-equipped instruments as separate "tracks", which can be manipulated by a computer that "talks" MIDI.

Atari 130 ST to Contain MIDI package

The new 130 ST "talks" MIDI. It can send commands and recieve data from any MIDI instrument. Differences in various manufacturers MIDI packages can be compensated for.

"The 130 ST is a *controller*. The only commands it accepts are under user-programmable software control. Therefore, with the appropriate software, it can interface with anyone's MIDI instrument, no matter how non-standard the commands" said Leonard Tramiel, Atari V.P.

Because of its large built-in and external memory, and high processing speed, the machine can handle a small score for 16 instruments. "We think MIDI is going to be very important" said an Atari source. "We want this to be a fun machine."

By P.R. Adler