Hardware

IN96-02-1288

Basic hardware components

There are certain hardware components which are basic to the operation of the system. Many of these can be optionally expanded for greater system capacity and flexibility.

Synclavier keyboard unit

The Synclavier keyboard unit

The **keyboard unit** includes a **Synclavier keyboard** with 76 velocity and pressure sensitive keys, a ribbon controller, and pitch and mod wheels. Above the keys is the **keyboard control panel** which contains banks of buttons, a display window and a control knob. On the back of the unit are additional jacks for pedal inputs, a breath controller or other studio equipment.

The keyboard unit is connected to a power source and to the Synclavier signal processor with a large flat cable. Other keyboards can be connected to either the Synclavier or Direct-to-Disk signal processor using the MIDI interface.

Graphics terminal, screen, terminal keyboard and trackball

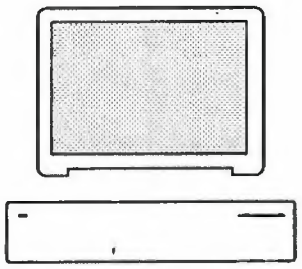
The **graphics terminal** is a Macintosh II. Currently, it emulates the Monterey MG600 terminal by using a program called NED StartUp. Future developments will include faster drawing speed, windowing, multitasking, using color and having the ability to use several terminal screens simultaneously.

The terminal acts as a communication link with the New England Digital ABLE computer, and is connected to a cathode ray tube (CRT) screen with 1024 x 768 pixel display resolution. There are contrast and brilliance controls on the screen.

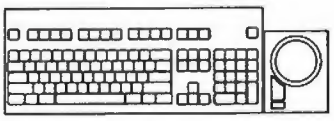
The terminal keyboard has 105 keys, 3 visual indicator lights and an audio tone generator. In addition to the standard typewriter keyboard, there are **function keys** (**F1, F2,** etc.) and a **numeric keypad** for special uses.

The **trackball unit** is a hand-operated device that has three components. The trackball is used to move the cursor and other items on the screen. The buttons on the trackball unit are used to activate commands, select screen items or scroll through options.

These four components are integrated with customized furniture to provide a coordinated graphics workstation.

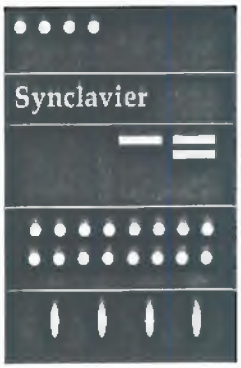


Graphics terminal and screen



Terminal keyboard and trackball unit

Basic hardware components (con't)



The Synclavier control unit

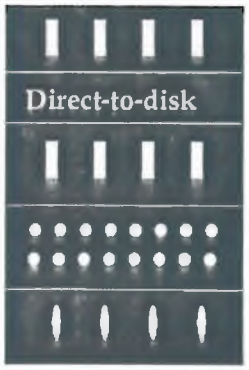
The Synclavier control unit contains the New England Digital **ABLE computer.** In addition to the signal processor, the unit contains memory boards for storing information and voice cards for playing back sounds.

One panel on the front of the unit has connectors for the keyboard, Winchester and floppy drives, the terminal and a printer. Another panel has connectors used for polyphonic sampling, FM synthesis and synchronization.

Depending on the configuration of your system, the control unit also may include the Sample-to-Memory module, MIDI and SMPTE interfaces, the Multichannel Distributor and the Clock Interface Module (CIM-1).

The Direct-to-Disk control unit and meter bridge

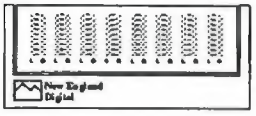
The Direct-to-Disk control unit has its own New England Digital ABLE computer. In addition to the signal processor, the unit contains Sample-to-Memory modules for analog input, Winchester hard disk drives for storing information and digital-to-analog converters for playing back sounds.



Depending on the configuration of your system, the control unit also may include MIDI and SMPTE interfaces and connectors for the terminal and a printer.

When the Synclavier and Direct-to-Disk systems are used together, the Direct-to-Disk follows the Synclavier in a master-slave relationship.

The **meter bridge** is a remote unit that has an LED display module with columns of 18-segment peak program meters (PPM). The meter bridge indicates the recording mode and signal level for each Direct-to-Disk track. The maximum signal sensed is +19 dBm.



Meter bridge

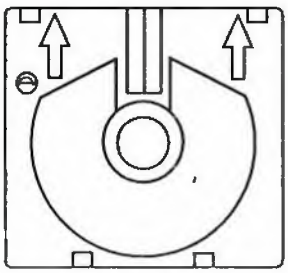
Synclavier storage devices

Sounds and sequences can be stored on a 5.25" high density (HD) **floppy disk,** on a **hard disk** or on **tape.** You also can store sounds on a write-once-read-many (WORM) **optical disk.** The drive for each storage device is a separate unit connected to a power source and to the signal processor. A Synclavier system must have at least one floppy drive and one hard drive to operate; two floppy drives and up to eight hard drives can be attached for additional storage.

floppy disk

Up to 1.2 megabytes of data can be stored on each floppy disk inserted into a floppy drive. Since these disks are removable, they can be used to build a portable library of sounds and sequences.

External hard disks come in a variety of storage capacities. Up to four can be chained together to form a single storage space. Two chains of hard disks can be attached to the signal processor for a total external hard disk storage capacity of 1 gigabyte.



optical disk

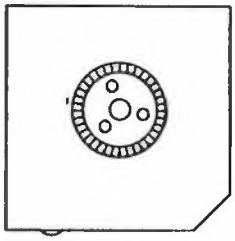
An optical disk inserted into an external optical drive holds up to one gigabyte of sound on each side. The transfer rate of the optical disk drive is approximately twice real time.

A tape cartridge inserted into an external tape drive comes in a variety of storage capacities. Tape cartridges are used for permanent storage.

Direct-to-Disk storage devices

Recorded signals from the Direct-to-Disk tracks are stored on hard disk drives mounted in groups of four in the Direct-to-Disk signal processor. Each hard drive stores sound from two Direct-to-Disk tracks. Up to eight hard drives, storing sound for 16 tracks, may be installed.

High-speed tape drives using tape cartridges can be installed in the Direct-to-Disk signal processor for permanent data storage. Each drive provides backup for two tracks. Up to eight backup drives can be installed.



Direct-to Disk tape cartridge

Optional hardware

MIDI keyboard

MIDI and SMPTE interfaces

MIDI makes it possible to place the Synclavier or Direct-to-Disk into a network of synthesizers, sequencers, rhythm machines and other audio processing equipment.

A MIDI module consists of one **MIDI INPUT**, four **MIDI OUTPUTS** and one **MIDI THRU** connection, expandable to 32 outputs. With an 8-output configuration you can select an auxiliary input for receiving MIDI sync signals. Each MIDI OUT port can carry messages on any or all of 16 channels.

The system can also send and receive MIDI **program change** signals and **song pointers.**

The Synclavier and Direct-to-Disk can read SMPTE **time code,** which makes it possible to synchronize music, dialog and sound effects with film or video. You can also use SMPTE to synchronize several recording devices, allowing them to act as one unit with multiple audio channels.

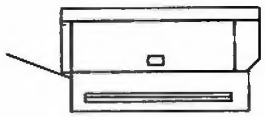
The Synclavier can generate SMPTE time code in any one of four formats.

- drop-frame,
- 30-frame (non-drop),
- 25-frame,
- 24-frame.

Other options

The **Sample-to-Memory** module provides audio inputs which allow you to record monophonic or stereophonic sounds. You can sample at rates of up to 100 kHz. Each module has four inputs, and up to four modules can be installed.

A **printer** can be connected to the Synclavier signal processor and to a power source. Many graphics, non-graphics and laser printers or digital linotype machines are suitable.



printer

The **Multichannel Distributor** option for the Synclavier provides separate outputs for up to thirty-two channels programmed from the computer terminal Multichannel Display.

The Synclavier **digital guitar** option allows you to play and record Synclavier sounds with a Roland GR guitar, either as a solo or as a duet with a keyboardist. The special input hardware for the option includes a Roland GR guitar, the Synclavier digital guitar control unit and a special guitar button panel.

digital guitar