**Computer Bin:**

**Slot 1: D0 PCI** Synclavier³ interface card

This card actually replaces the computer in the bin and enables an Apple computer to run the operating system. These cards can be plugged out when running in this mode:

D4567, FPRM, DSM

**Slot 1 or 2: D32X** Computer interface

Poly (bottom) and multichannel (top) interface, date code pre 3/85 will not work with D40Q

**Slot 2+3: BE483** (BE = bin extension)

This card is needed to expand the system with further poly bins, like in the 64-voice and 96-voice Synclavier 9600 systems.

**Slot 5+6: M170** MIDI Controller

MIDI interface in computer bin works in conjunction with MU70 UART card in MIDI panel. Two M170s may be in one system (slots 3+4 in 25-slot bin). Each one provides a 1x4 MIDI matrix. Currently, two M170 cards will yield a 1x8 matrix with the second IN being a THRU. These cards must be addressed as 0 or 1 (controlled by DIP package).

**Slot 7: DSP70** Digital Sound processor

Time compression/expansion option for the Synclavier and Direct-to-Disk

**Slot 8: D4567 Math Processor (Multiply/Devide Unit)**

Math card, performs real time math (chorusing etc.)

**Slot 9: D100A** Floppy Controller

**Slot 10: D40Q** Terminal Interface

D40Q: 4 RS232 ports and clock function (crystal) takes the place of MFC. The processor runs on a D3 clock which can be generated four ways

1) D100 + MFC

2) D100A + MFC

3) D100A + D40Q

4) M64K + D40Q

The load button on F0: activates firmware on MFC or D40Q "maxi" or "mini" ROM's (4) or boot ROM (1) which is hardwired. The Boot ROM on the D40Q is hardwired and will only work with the 5 1/4" High Density floppy drives (D100A interface)

**Slot 11: D01** HOP Interface card (Hand-operated processor, low-level test-device)

**Slot 12: M64K** Core memory (alternativ: M60K oder M32K)

Bootload memory, used for computer functions, important also for VP/K-Interface. Axial connectors for synchronization signal with Polybin PSSRGA and/or DTD-cards (daisy chained)

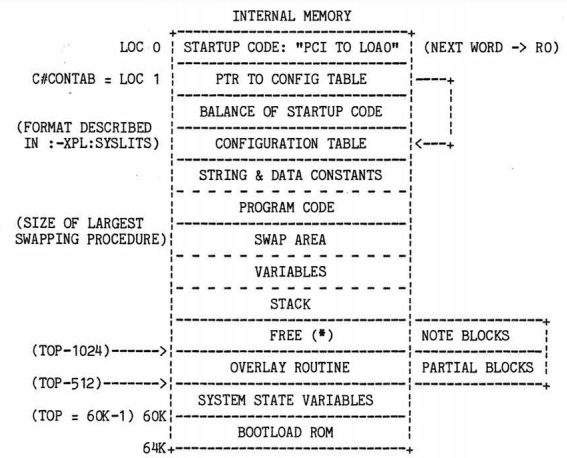
Note: Jumper J0 closed = clock enabled

Synclavier-Computer: J0=closed, J1=closed, j2=closed, J3=open, j4=closed

DtD-Computer: j0=closed, j1=open, j2=closed, j3=closed, j4=closed

Multifunction board: timer, interrupts, internal memory, etc.

* Realtime-Clock, calendar via Intersil ICM7170 chip
* 64 k Words of (internal) memory with 4 x 62256 (32Kx8 SRAM)
* SK2 Keyboard interface (jumpered off)



The computer requires 60k words of core memory obtained from 2 M32Ks or 1 M64k (memory = 4 x 62256 (32Kx8 SRAM). In old systems running software releases before "R" only need 56K of core memory in the form of 7 M8Ks (like the original Synclavier II). The computer uses the first 60k of core memory. The last 4k is loaded with the Boot ROMs.

The Synclavier software is loaded into the PROGRAM CODE and SWAP AREA portions of INTERNAL MEMORY for execution.

**Slot 13: FPRM Fast Processor Card 2 (register module)**

**Slot 14: DSM Processor Card 1 Model D (command sequencer module)**

The ABLE computer (1975), an early product of New England Digital, was a 16-bit [mini-computer](https://en.wikipedia.org/wiki/Minicomputer) on two cards, using a [transport-triggered architecture](https://en.wikipedia.org/wiki/Transport_triggered_architecture#Implementations). It used a variant of [XPL](https://en.wikipedia.org/wiki/XPL) called Scientific XPL for programming. Early applications of the ABLE were for [laboratory automation](https://en.wikipedia.org/wiki/Laboratory_automation), data collection, and device control.

The commercial version of the Dartmouth Digital Synthesizer, the Synclavier, was built on this processor.

D1 + D300 = Model B (Synclavier II)

FPSM + FPRM = Model C (PSMT)

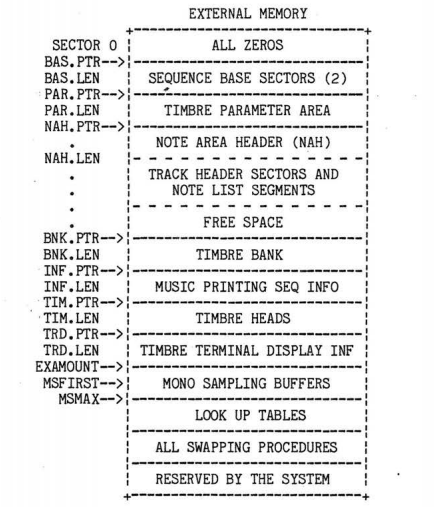
DSM + FPRM = Model D (3200/6400/9600)

**Slot 15: M512K** External memory

Expandable (128K, 512K or 1024K) M128K, M512K or M1024K

Used for Real Time Performance Software (RTP), Sequences, FM "sound" information (not dynamically assigned. There are limits).

When the Synclavier program is running, the lower addresses of external memory are used to store sequence, timbre and note information for the user.



M128K

M512K

M1024K (rare cards)

M128Ks are addressed with 3 switches on a DIP package using negative logic

up = ON

0 = up, up, up

1 = down, up, up

2 = up, down, up

…

7 = down, down, down

M512ks have 5 switches on a DIP package and must start addressing at multiples of 512 (0, 512, 1024, etc.) If M128K and M512K cards are both used, 4 M128Ks may be placed before M512K (addressed as 2) or placed after M512K cards, but with addresses not exceeding 7. Thus with 2 M512K cards, M128K cards must be addressed in multiples of 4 before M512Ks. You can use up to 32 MB external memory!

The order (from left to right or vice versa) is not important. Only the DIP-switch settings need to be uniquely set: Card 1 - all off, Card 2 – “1” on, Card 3 – “2” on.

**Slot 16: M512K**

**Slot 17: M512K**

**Slot 19: D115 D** Synchronization card (Communication port RS422)

**Slot 19: D72** VITC SMPTE-Card

SMPTE reader card. Generation is achieved through software but D72 reader card must be present for SMPTE generation. There is no regeneration of SMPTE during reading.

**Slot 20: D30** TD Kennedy Tape Drive interface

Can be used to back up either SCSI or IMI hard drives. 15 Mb of storage per tape. 25 MB is possible but not recommended. Not supported by PowerPC hardware.

**Slot 21: D24/50** SCSI Host Adapter

Each D24 (up to two in a system - the DTD can have three) can support 8 devices on one SCSI chain. Devices 6 and 7 are not used. Hard drives are addressed from Device 5 to Address 2. Optical drives are also on this chain

1 = Optical Drive 1

2 = Optical Drive 2

3 = DtoD

4 = W1:

5 = W0:

6 = DtoD drives

Older type:

IMI D107

Supports system Winchesters. One D107 can support only 1 device; either a 7700 series Winchester or a 500H controller which can control 2 hard drives.

Current software can only support two hard disk drives. SCSI, IMI or both. Two D107s or 2 D24s in a system must be addressed as 0 or 1. If there is one D24 and one D107 in a system, they are both DIP'd to address as 0.

**Slot 22: D134** Digital Guitar Interface

**Slot 23: Empty**

**Slot 24: D160** Digital Synthesizer Interface (FM)

Also generates click track, Clock IN/OUT and Headphone OUT.

Two versions:

1) Old click (non Poly) audio circuitry on D160, +/-25v clicks

2) New click (Poly systems) audio circuitry on PSAJB (on PSCONII) +5v clicks only

**Slot 25: D164** Audio+CV Output from Synthesizers

Mono filtering card for mono FM systems

interprets jack panel on back of keyboard (gate, trigger, etc.)

Uses +/- 15v supply from FM chain (last card in chain)

**Multichannel Bin:**

**MT3** - Multichannel interface (connects to D32X in computer bin)

**MT1** - **Input card** (one per voice card for 4 voices);

Routes individual voices through multi-out. Voices are randomly chosen from the computer for play but are routed specifically to a multi-input.

**MT2** - **Output card**; takes individual inputs and routes through 8 outputs

There are two types of MT2

1) MT2 standard; average = -10 dBm output

2) MT2 (common) hot (the name is hand printed); average = 0 dBm output

The bin is designed for 8 outputs and is repeated for every additional eight. There is an upper bound of 32 outputs (however, very early towers might need a special upgrade to go past 16 outputs. Some very early PSMT and PST towers had 32 outputs).

Every voice card (PSV, DDVs-3, SS7 OR SS7X) requires one Multichannel input card (MT1)

For each MT3 and set of MT1s, there is one output card (MT2) which provides 8 outputs.

FM input is always (by convention) to the left of poly input. No space is left between any of the cards - empty space is open of the right of the MT2.

5v and +/- 15v supplies are both on the back plane

**Poly Sampling Bin:**

**Slot 1-4: Poly sampling memory**

Poly RAM: expandable to 256 MB per bin (3 bins total) PSM1M or PSM4M,

MegaRAM 16, 32, 64 (same cards, more memory chips and different ROMs)

Poly system can support up to 32 meg in either

PSM1MB 1 MEG

PSM4MB 4 MEG

If the system has an upgraded PSBMC-card, you can use MegaRAM. 256 MB limitation per bin

When installing memory cards, install from right to left (empty slot on left) with PS1MB cards next to PSBMC. PSBMC addresses memory from left to right (lowest # slot is lowest # address) but reads serially from right to left.

With the memory expansion bin, the bin is placed in serial chain with PSBMCs cabled in order. With all PSM4MB cards, it is not necessary to have any memory in tower poly bin. 32 MB can be addressed from a single PSBMC in the expansion bin.

Test of memory:

MB by MB or given card configuration, card by card

**Slot 5: PSBMC**: Memory controller card

**Slot 6+7: PSPA1+2: Phase Accumulator** **Card Set** - allows sample to be transposed without losing characteristics (older systems were limited by maximum sampling rate. So if you planned on playing a sample one octave higher, you would need to sample at 25 KHz so that the 50 KHz limit would not be hit).

Note: Additional 74F203 in U105A needed to address more than 32 MB Ram (or MegaRAM?)

Question: Required if used in DTD?

In UA204 chip with Firmware > 2.01 required

**Slot 8: PSSRGA: Sample rate generator** - Clock for poly bin. Supplies 32 separate clock rates for the D/As for transposition of pre-recorded samples.

**Slot 9: PSCI Polybin Computer Interface** (connects to D32X card in computer bin)

Poly is a synchronous system. The back plane in the Poly bin is slot dependent.

The data bus is on the back plane. The serial chain is cabled.

**Slot 10: PSF: Formatter** - formats all information for communication on data bus or serial chain. Thus a bad formatter can drag down the whole bin (affect all cards).

Function: the PSPA’s feed the PSF with information about transposition and memory location depending on the input from the PSCI/D32X. The PSF then formats the sample data accordingly and sends it down the serial chain (cables) via PSADC>PSBMC>PSDDAC.

Note: PSF requires 2 ROM updates if upgrading from PSM to PSBMC:

U211 R2 -> U211 R3 and U505 R0 -> U505 R1

**Slot 11: Empty**

**Slot 12: PSADC: Analog to digital** controller, interface to STM, also handles playing stereo samples

**Slot 13: Empty**

**Slot 14+15: PSAC: Amplitude computer** - controls voice card volume levels/envelopes. Each card can control up to 16 voices. Slot 15 is for voices 1 - 16, slot 14 is for voices 17-32

**Slot 16: PSDAC/PSDDAC: Digital to analog controller** - controls up to 32 voices

**Slot 17-24: PSV or DDV:** Poly voices

1 PSV or DDV is 4 voices, left and right

**DDV-3:** Modified DtoD voice card to work in a Synclavier with the newer lower specification Digital to Audio converter. With new system configurations with DDVs-3 etc., there is an update to the PSSRGA to correct jitter problems not noticeable with PSVs.

**Slot 25: PSOC** Composite audio output card and +/- 15 V distributor for voice cards

**Rack STM: Stereo sampling module** (Sample To Memory) - Stereo up to 100 KHz to poly memory. One motherboard with two daughter boards, capable of sampling at 50 KHz each unless you purchased a newer system or upgraded to allow 100 KHz sampling.

**The Serial chain is made up by: PSF-PSADC-PSBMC-PSDDAC-PSF**

Voice allocation is achieved on back plane (not in the cabling as in the FM bin)

Keyboards:

All poly system have 25 slot computer bins. The SK2 card (Keyboard interface) is in slot 23. The SK2 connects to the audio connector panel. In older versions of software (Release N), the manuals mention the ability to connect more than one keyboard to a Synclavier for simultaneous use. You can still connect a Synclavier guitar and Keyboard at the same time for simultaneous performances.

A 50 pin flat cable connects keyboard to audio connector panel . This cable is identical to SCSI specification. The cable is sleeved, not shielded due to the connector’s plastic manufacture. Standard cables length is 22 ft. 50 ft is also available. The SK2 can drive approximately 55 to 60 ft (the RS232 cable to terminal can be run up to 300 feet. 50 or 22 ft cables are supplied with machines). With a modified SK2 card, keyboard cable lengths up to 100 feet are possible.

M64k core memory card in computer bin has SK2 on it but is jumpered off in present configuration

VK5 is interface in keyboard

There are 2 types of Mod/Pitch wheel assemblies

Old: wheels are separate from cover plate

New: wheels and cover plate are one piece

The new VK2 board will not work with old wheel assemblies

Some wheels are wired backwards (like mine was). Always install the extention cable that comes with wheel assemblies.

It is possible to increase resolution of wheels by a simple engineering modification.

Computer bin:

3 type of processors

1)A Not found

2)B Old Synclavier II

3)C (Fast processor) all DtoD, Poly and some Synclavier IIs

Supposedly some DtoD have a Main model D and a slave model C processor

4)D Last release; all 3200, 6400, 9600, PostPro & PostProSD

Certain code written for the C processor will not work in a B processor. If you have an -XPL catalog on your W0:, you will notice some routines separated for different processors

Model B:

D1 (instruction sequencer) slot #14 and 14 in 25 slot bin

D300 (registers)

Model C:

FPRM (registers)

FPSM (sequencer)

Support cards:

MFC: multifunction terminal interface and loader card

D100/D100A: floppy controller

M32K: core memory

M64k core memory with clock function

~~D40Q: 4 RS232 ports and clock function (crystal) takes the place of MFC~~

The processor runs on a D3 clock which can be generated four ways

1) D100 + MFC

2) D100A + MFC

3) D100A + D40Q

4) M64K + D40Q

Floppies:

8" Single density D100 ("maxi", 20 MHz crystal, 26 pin connector)

5 1/4" Single density D100 ("mini", 10 MHz crystal, 26 pin connector)

5 1/4" Double density D100 ("mini", post 1982, 26 pin connector)

5 1/4" High density D100A (post 1983, 34 pin connector)

The D100A can use a 5 1/4" Double Density as a read only device in F1

~~The load button on F0: activates firmware on MFC or D40Q "maxi" or "mini" ROM's (4) or boot ROM (1) which is hardwired~~

When a disk drive is upgraded in a system with the MFC, the ROMs must also be upgraded

~~The Boot ROM on the D40Q is hardwired and will only work with the 5 1/4" High Density floppy drives (D100A interface)~~

Core memory:

The computer requires 60k of core memory obtained from 2 M32Ks or 1 M64k. In old systems running software releases before "R" only need 56K of core memory in the form of 7 M8Ks (like the original Synclavier II).

The Model B processor can run with either M8Ks or M32Ks. There are OLD/NEW jumpers to select between OLD (Model B) and NEW (Model C). M64ks will only work with the Model C processor.

The computer uses the first 60k of core memory The last 4k is loaded with the Boot ROMs

Math Card:

D4567 Multiply/Divide.

Performs real time math (chorusing etc.)

External memory:

M128K

M512K

M1024K (rare cards)

External memory is loaded with Real Time Package, sequences, etc.

M128Ks are addressed with 3 switches on a DIP package using negative logic

up = ON

0 = up, up, up

1 = down, up, up

2 = up, down, up

7 = down, down, down

M512ks have 5 switches on a DIP package and must start addressing at multiples of 512 (0, 512, 1024, etc.) If M128K and M512K cards are both used, 4 M128Ks may be placed before M512K (addressed as 2) or placed after M512K cards, but with addresses not exceeding 7. Thus with 2 M512K cards, M128K cards must be addressed in multiples of 4 before M512Ks. You can use 4 (or more, if you have room) M512K cards for larger sequences. (But the software does not address past a certain point so it is kind of pointless. Although the PowerPC software \*supposedly\* can "see" beyond this limitation (yeah right!!!)

D16 timer:

Does external timing (MIDI, SMPTE, etc.) The D16 was designed with the fast processor (Model C)

MI70: slot #3 & 4

MIDI interface in computer bin works in conjunction with MU70 UART cart in MIDI panel. Two MI70s may be in one system (slots 3+4 in 25 slot bin) Each provides a 1x4 MIDI matrix. Currently, two MI70 cards will yield a 1x8 matrix with the second IN being a THRU. These cards must be addresses as 0 or 1 (controlled by DIP package)

D72: slot 16

SMPTE reader card. Generation is achieved through software but D72 reader card must be present for SMPTE generation. There is no regeneration of SMPTE during reading.

Hard Disk Controllers:

2 types

SCSI D24

Each D24 (up to two in a system - the DtoD can have three) can support 8 devices on one SCSI chain. Devices 6 and 7 are not used. Hard drives are addressed from Device 5 to Address 2. Optical drives are also on this chain

1 = Optical Drive 1

2 = Optical Drive 2

3 = DtoD

4 = W1:

5 = W0:

6 = DtoD drives

IMI D107

Supports system Winchesters. 1 D107 can support only 1 device; either a 7700 series Winchester or a 500H controller which can control 2 hard drives.

Current software can only support two hard disk drives. SCSI, IMI or both. Two D107s or 2 D24s in a system must be addressed as 0 or 1. If there is one D24 and one D107 in a system, they are both DIP'd to address as 0.

Kennedy Tape Drive:

D30TD:

Can be used to back up either SCSI or IMI hard drives. 15 Mb of storage per tape. 25 MB is possible but not recommended. Not supported by PowerPC hardware.

Sample to Disk:

D66M: Memory card

D66C: controller card

ADX: Includes D/A and A/D

FM interface D160

Also generates click track, Clock IN/OUT and Headphone OUT.

Two versions:

1) Old click (non Poly) audio circuitry on D160, +/-25v clicks

2) New click (Poly systems) audio circuitry on PSAJB (on PSCONII) +5v clicks only

D164:

-Mono filtering card for mono FM systems

-interprets jack panel on back of keyboard (gate, trigger, etc.)

-Uses +/- 15v supply from FM chain (last card in chain)

D32X:

Poly (bottom connector) and multichannel (top connector) interface

Note: date code pre 3/85 will not work with D40Q!!

D40:

printer

RS232 port DIPíd for baud rate

can be modified to a D42 for a modem

can be modified to a D44 for a mouse (almost never seen)

D40Q:

Four RS232 ports for printer, terminal, modem and mouse. Terminal baud rate can be DIP'd between 9600 and 19,200 & 38400. Standard setting is 38400 for the Synclavier computer (1=on, 2=off, 3=on).

*(obsolete: 38,400 is just too fast for most computers unless you are running well over 100 MHz, otherwise errors may occur in NED StartUp. The new Termulator program re-enables the discontinued X-on x-off that helps control signal transmission - gives the computer time to catch up.)*

D134:

Guitar interface

DTD slave computer bin:

The slave is a SCSI device as far as the Master is concerned It is placed on the SCSI chain after the last SCSI Winchester (System) and is connected at the D24 in slot 2

Slots 13 and 14 are the fast processor (FPRM & FPSM)

Slots 11 and 12 are M32Ks or slot 12 is the M64K for core memory

Slot 9 is the D100A Super Floppy controller

Slot 10 is the MFC with DTD 0 through DTD 3 ROMs. An MFC is always used in the slave bin (no D40Q)

Slot 15 is the D32X Poly interface

Slot 8 is the D4567

with M32K core memory, a D16 timer is required to form the D3 clock. The same is true of the D100A

Slot 3 is another D24 for controlling track drives (hard disk and tape) which has ID #3

1 M512K card is required for external memory

An M170 is required along with panel mounted MU70 for driving the meter bridge

Caution: Do not hot patch the meter bridge!

The reset switch will clear memory and reload software but will not restart the system

.LOD software is loaded into core memory through SCSI from either the Synclavier or DTD master bin

DtoD poly bin

PSF slot #10

PSBM buffer memory is slots 3&4 (8 track, 1 MB card)

PSADC slot #12

PSBMC slot #5

DDDAC slot #16

PSAC slots #14 & 15

PSSRGA slot #8

PSPA slots #6&7

DDV slots #18&19 (8 track - 4 voices per card)

PSV (dummy) slot #17 (PSV w/o DAC or just termination resistor pack, used to fake voice allocation for inputs)

PSOC slot #25

-Serial chain: PSF-PSADC-PSBMC-DDDAC-PSF

-1 PSV dummy is required for each STM

-The PSOC is chained to voice cards

-Samples are taken from STM to the PSDC, through the buffer memory to the hard disks

-Outputs are hard wired, Track 1 to voice and output 1 L&R

-Buffer memory cards are next to PSBMC and are addressed and read right to left (slot 4= card 0)

-Two 50 pin SCSI ports on each PSBM. 2 tracks per port. Top port is lower number (slot 4, top port = tracks 1&2)

-The D24 in slot 3 communicates through SCSI to the PSBMC which passes information through the back plane to the PSBM that control the hard drives and tape drives through 50 pin SCSI connectors

-Since the tracks are recorded on SCSI devices, more than 1 hard disk may be chained on the tracks to provide more recording time. At present, the tracks are divided at SCSI devices so that hard drives of the same size must be used (And they mean EXACTLY the same size. Identical drives might be off by one or two sectors because of ROM differences. Make sure they match or errors can occur)

Computer:

A mini computer comprised of 2 cards which is capable of transmitting information at a speed of 2 MIPS makes up the basic processor

64K of memory is required to manipulate basic system files for proper operation

Additional external memory is used for NED software packages (SFM, RTP, etc.)

The other boards are all I/O boards. Comprising of timing boards, multiply and divide boards and individual interfaces for other sub-assemblies

It is possible (and has been accomplished) to make a computer that fits into a legal briefcase. A terminal is required to interface. Using a Mac computer, programs can be written on the ABLE and saved on a MAC disk later to be imported into the ABLE via the modem port. This is no longer a concern now that the RTP and ABLE software run natively on the Mac.

FM:

The bin is designed with 6 cards making up a bank of 8 stereo voices. These cards can then be repeated up to 4 times for 32 stereo voices.

SS1 - Memory; codes for timbre numerically

Common failure -5th harmonic is radically distorted

SS2 - Oscillators; audio frequency generator

Common failure - notes scrambled, portamento bobbling, pitch variation

SS3 - Modifier; envelopes, volume

Common failure - failure to do frequency modulation

SS4 - Interface

Common failure - no sound or no voices being detected

SS7 - Voices cards; 8 voices per card. One card is left, the other right

Common failure - distorted voice or no multi out

SF1 - Filters; composite outputs, filters, headphone jacks

Common failure - lacking one or all of the above

Multichannel:

D32X - Computer interface

MT3 - Multichannel interface

MT1 - Input card; routes individual voices thorough multiout

MT2 - Output card; takes individual inputs and routes through 8 outputs

There is one MT1 card for every voice card. Voices are randomly chosen from the computer for play but are routed specifically to a multi input.

The bin is designed for 8 outputs and is repeated for every additional eight. There is an upper bound of 32 outputs (however, very early towers might need a special upgrade to go past 16 outputs. Some very early PSMT and PST towers had 32 outputs).

**Sampling:**

ADX16 16 bit Mono to Disk (works in real time with SFM)

STM (Sample To Memory) Up to 100 KHz in mono or stereo depending on configuration

**FM:**

D160 interface in computer bin

SS4 interface in FM bin - tells the computer # of voices, etc.

SS1 Wavetables (Memory)

SS2 Oscillators

SS3 Modifiers

SS4 Interface

SS7 (old bins) Voice cards - shorter to allow for back plane adapter

SS7X (new bins) Voice cards - regular length cards

SF1 Stereo Filter Card (analog filters, +/- 15 v supply, etc.)

Voice cards are susceptible to heat malfunction due to analog electronics.

Make sure your fans are arranged as exhaust fans in the bins and rear panels.

Multichannel MT2

There are many revisions and versions of each in stock, briefly: The oldest versions and the versions with the normal/lower level output are the lower prices at $125, the rare newer versions [which work differently] and the higher output versions are the higher prices at $250, and the newer version that is *also* the higher output version is $300.

Generally speaking, users making the mistake of monitoring everything they do in their life through a DAW like Pro Tools or Logic instead of using a real analog mixer that has actual +4 balanced line inputs [which almost nothing in the music store has had in 30+ years, "mic/line" is mic plus a massive resistor, adding both noise AND distortion] will do best with the standard lower output versions that everyone had the first three years in the mid 1980s, and the few, few users playing back very complex, busy sequences of many voices playing/routed simultaneously will also do well with those regardless of what they are routed to. Users routing into a real analog mixer, 24-track 2" analog tape machine, or even into an NED Direct-to-Disk system, and especially those just listening and playing the keyboard themselves where they are only playing a dozen or fewer notes at once will do best with the special higher output versions, it will be much more satisfying that way, but the higher output is a big step up and it also exists at the top so a lot of voices routed at once can get distorted, where the normal version is most likely incapable of clipping no matter how many voices are playing, it just doesn't sound as good playing solo piano, etc.. The higher level versions were developed in the late 1980s because almost everyone was going directly to analog 24-track which could take a very hot level that the standard MT2 cards didn't have, and the special higher level version improved the gain structure for that. But roll up 20 years and users "mixing" through an RME Hammerfall or some other crap sound card would get massive clipping, real digital clips, with the high level card. So even 35+ years later, different cards are best for different users.

Synclavier II Computer Bin

1 x M512K-187 (extended memory card of 512KWord, i.e. 1 Mbytes)  
1 x D16-385 (Timer card)  
**1 x MFC1-877** (boot and terminal card)

**1 x FPSM-286** (CPU card ABLE type C, part1)

**1 x FPRM-185** (ABLE type C CPU card, part 2)  
1 x M32K-283 (32KW direct memory card, i.e. 64 Kbytes)

1 x D72 SMPTE-286 (card SMPTE code reading, i.e. time synchronization)

There is also a module in the form of a 19 ″ 1U rack, it is:  
1 Clock interface module CIM-1 (note divider module, it allows synchronization with old magneto, etc.)

Now there are these cards and others (available for sale or exchange)

1 x M32K-283 (32KW direct memory card, i.e. 64KBytes)

2 x M128K-984 (128KWord extended memory card, i.e. 256 Kbytes)

**1 x D4567-679** (arithmetic card)

**1 x D100A**-285 (controller card for Double Density reader)

**1 x D300**-1077 (ABLE Type B CPU card, 1st part)

**1 x D1 -777** Sequencer (ABLE Type B CPU board, 2nd part)

2 x MFC1-877 (boot and terminal board)

1 x SK2-482 (interface board for ORK and VPK)

1 x D24 SCSI-186 (SCSI board with one connector at 34 pins)

1 x D40-679 (serial card for printer and modem)

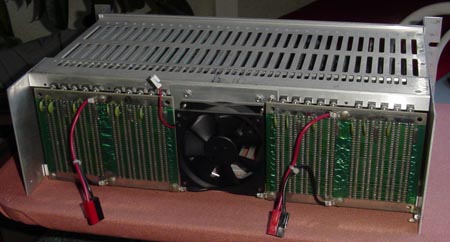
On the other hand, I am a little disappointed… the BIN CPU, ie the rack with the backplane which houses the computer part of the Synclavier is of the same type as the one already in my Synclavier II. It is a CPU BIN for ABLE A and B CPUs, it is made up of 32 card slots, only 21 of which can be plugged into the BUS. The ALE is the name of the processor (entirely in TTL components in DIP format) of the Synclavier. Here is a photograph:  


It's a shame when we know that there is the latest version of BIN CPU for ABLE C and D CPUs with 25 really usable slots, as in the following photograph:  


This CPU BIN for ABLE A and B should be sufficient, not needing 25 slots… for now.

As, I am in full tinkering in the case, I take this opportunity to modify the back of the FM rack to evacuate the hot air which is blocked on the side of the power supplies and which heat up enormously. This, simply by adding a fan! It's work, but luckily I have a DREMEL drill press, or how to make a large opening using a circle of small holes.

The rack before the modification seen from the front:  


The rack afterwards, still seen from the front (but with a large hole in the aluminum plate and an additional fan):  
  
And from behind:  


Until now, I used the Synclavier II with an “H” version of the system software, this software had the specificity of working only from a double density floppy drive…  
obviously, I had two DD drives. Some time ago, I added: a SCSI card and a SCSI hard drive, 512KW of extended memory, and a controller card for HD floppy disk drive but the "H" version of the software was not able to handle these. peripheral devices.

Now my Synclavier II is running an “M” version of the system software!

DEVICES A:ND THEIR ADDRESSES

The following devices are connected to the ABLE buss to support the full configuration shown in the previous diagram:

D456Y - Multiply/divide (really D4,D5,D6,D7)

D3 - Real time clock (used to generate 5 msec interrupts)

D16 - Scientific timer (used to generate 1 msec interrupts)

D24 - SCSI host adaptor

D30TD - Kennedy 15mb cartridge tape drive

D32X - Buss extender card containing:

D32 - Multichannel distributor interface

D154-157 - Poly synthesizer interface

D34 - Guitar and button panel interface

D40Q - Combined serial port card containing:

D40 - Printer port

D42 - Modem port

D44 - Mouse port

D50 - Terminal port

D60 - External memory interface

D70 - Combined interface address containing:

D7-(8) - SMPTE interface

D70-(16) - MIDI interface

D100A - Floppies

D130 - Clavier and button panel interface (velocity keyboard)

D160 - FM synthesizer interface

D160 - Keyboard analog I/0 interface (original keyboard only)

DIRECT TO DISK

The direct-to-disk system connects to the main ABLE computer via the SCSI buss. It contains another ABLE computer which is the same as the main one except it does not boot from a floppy. The boot ROM is modified to receive data from the main ABLE over the SCSI; there are no floppies or winchester disks on the "Direct-to-disk ABLE".

POLY RAM

Poly memory is not directly addressable by the ABLE CPU. It is accessed as a device is through the use of XPL "read" and "write" statements. Because it is addressed using two registers totalling 24 bits, it is possible to have a maximum of 32 megabytes of poly memory. This is in the process of being increased to 28 address bits allowing up to 512 megabytes of poly. Poly memory is divided into SECTORS of 256 words each. When accessing this memory,~ the poly system must have the function code set to either read or write to poly memory. Then a single data register is used to specify the address and data. The data register must receive first the sector address, then the offset into the sector, and finally the data word(s). Poly memory accesses always cause an auto-increment after each one.