The CP/M CARD
from Advanced Logic Systems (ALS)
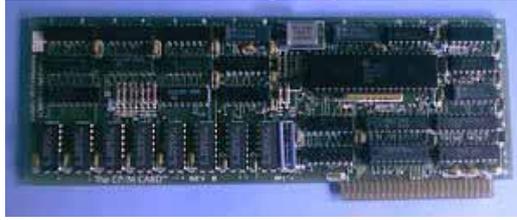
 One of the most popular add-ons for the Apple II was a card which let the computer run the CP/M operating system. Digital Research's CP/M was designed for the Intel 8080 microprocessor and a lot of software was written for CP/M from the late 1970s to the early 1980s. The simpler CP/M cards were just a Zilog Z80 microprocessor (software compatible with the 8080) with a few logic chips which enabled it to plug into an Apple Bus slot and take over from the onboard 6502 processor.

ALS's **The CP/M CARD** (that's its name!) was one of the fancier ones. The Z80 on the card runs at 6 MHz, while the cheaper ones normally run at 2 or 4 MHz. It also has its own 64 KB of RAM. This means that it can use the Apple II memory for text display, buffers, I/O drivers and parts of CP/M and still have 61 KB left for running CP/M programs. Later versions of the utilities provided with the card allow the CP/M operating system and software to be installed to a virtual disk stored on a ProDOS drive. It can even boot into Apple's ProDOS, then start CP/M and continue to use the ProDOS drivers for the clock and disk drives, including RAM drives.

Installation Notes

The card must be installed into either slot 4 or slot 7. The 5.25" drive controller must be in slot 6. If you want to install the software to a ProDOS drive (hard drive or 3.5" floppy) the controller for that must be in slot 5.

Apple IIGS Users: Copy the files from the CP/M Full Install archive to a 3.5" floppy disk. Put the card in slot 4 or 7. In the control panel set the appropriate slot to Your Card, the startup slot to 5 and system speed to Normal. The software won't boot properly unless you do a cold boot. To guarantee a cold boot, turn the power off, insert the 3.5" disk and turn the power on.

More info is available in the Overview and Update Notes that came with the 3.01C update.

Disk images for *CP/M Plus for The CP/M Card* revision 3.01C

The disks are stored in ShrinkIt 5.25" shrunk disk archives.

CP/M Disks

- Disk No. 1
- Disk No. 2
- Disk No. 3
- ProDOS Utilities

ProDOS disks, used for installing the CP/M software to a ProDOS drive

- /BOOT Disk
- /CPMBOOT Disk

This is a ShrinkIt file archive containing all the files from the four CP/M disks installed to a virtual disk. If you want to run it from a hard drive or 3.5" floppy drive this is all you need. The folder must be copied to the root directory of a ProDOS drive in slot 5 and the folder name must not be changed from CPM.

- CP/M Full Install

CP/M 3.01C OVERVIEW

CP/M 3.01C is Advanced Logic Systems' latest release of CP/M Plus for the CP/M Card. It allows the user to take advantage of a Profile compatible hard disk, a RAM disk and ProDOS compatible clock cards.

All I/O to the hard disk is accomplished by making calls to ProDOS. This means that CP/M and ProDOS can share the hard disk resource. ProDOS remains in memory while CP/M is running. This means that the user is able to jump between CP/M and ProDOS as desired. This release of the ALS BIOS will support 5 or 10 megabyte hard disks. Only one logical volume per hard disk is supported. The Apple host adapter must be installed in slot 5 and an Apple or Apple compatible floppy disk controller must be installed in slot 6. Support is also supplied for the Catalyst menu package by QUARK. CP/M applications may be called directly from the Catalyst menu.

When CP/M boots up it looks for a ProDOS volume called /RAM. When it finds /RAM, a file called SYSTEM will be opened. It assumes SYSTEM is the environment for a 60K RAM disk. A utility called INITRAM is supplied to set up and initialize this RAM disk. Once the RAM disk has been set up and initialized, any files placed there will remain intact until the Apple is turned off or reset. Therefore, you may go into CP/M, set up the RAM disk, copy files to it, go back to ProDOS and your files will still be intact.

A utility called DATESET is supplied to read the ProDOS date and time and set the CP/M date and time. The date and time are only reset when the utility is run so variations in time may occur.

Hard Disk Installation Procedure

The controller or host adapter for the hard disk must be installed in slot 5 of the Apple. To install CP/M on your hard disk, follow the manufacturer's instructions for installing ProDOS. When ProDOS has been properly installed, simply place the diskette marked /BOOT in the first floppy drive and turn on the Apple. A message will appear informing you that CP/M has not been installed on the hard disk. It will ask if you would like to install it at this time. If you answer NO the boot program will try to boot up CP/M from the floppy disk. This system has RAM disk and clock support but no hard disk support. If you answer YES, you will be asked to insert the install diskette and press RETURN. The install disk is labeled /CPMBOOT. A directory called CPM will be created on the root directory of the hard disk and the CP/M files will be copied to it. These files must never be written to or destroyed as CP/M will not function without them and data may be lost. After the files have been copied to the hard disk, you will be asked for the prefix of the directory from which you wish to run the next program. Type the name of your hard disk volume followed by /CPM. For instance, if the name of your hard disk volume is /P, you would then type /P/CPM. You will then be asked for the name of the program to be run. Type CPM3.SYSTEM. This is the CP/M boot program. After some activity on the hard disk, you should get the CP/M sign-on on the screen and the ALS HELLO program will execute automatically. You will find several files already on your CP/M directory. These files should not be overwritten. Some of them are standard CP/M utilities such as SUBMIT.COM, SETDEF.COM, DATE.COM and PIP.COM. Others

such as QUIT.COM are special utilities for use with CP/M and ProDOS. You will
find the ProDOS utilities on the back of the CP/M diskette labeled #3.

APPMAKER

APPMAKER.SUB is a submit file that replaces the APPMAKER.COM file available in
earlier releases. APPMAKER.SUB gives the user the flexibility of specifying
which files are to be copied to his application diskette. To use APPMAKER.SUB,
place the diskette that contains: SUBMIT.COM, APPMAKER.SUB, DSKCOPY, PIP.COM
and any other files to be copied to the application disk in Drive 1. Place a
blank diskette to be copied onto in the second drive. Type SUBMIT APPMAKER
after the A> prompt. The diskette in the second drive will be formatted and the
files specified in APPMAKER.SUB will be copied onto it. APPMAKER.SUB may be
altered by using ED.COM or another editor or word processor.

Drive assignments assume the default. The defaults may be changed using
FLIP.COM.

CATALYST

CATALYST.COM is a utility to be used in conjunction with the ProDOS hard disk
menu package CATALYST //e by Quark. It will pick up the name of a program
passed from the CATALYST menu and execute it. One would generally include a
reference to CATALYST as the last statement in PROFILE.SUB. This reference
causes the program selected from the CATALYST menu to execute when CP/M Plus is
booted up. Therefore you can execute a different program each time you enter
CP/M without ever changing the PROFILE.SUB file. Reference page 3-9 in the
CATALYST //e manual for a description of how program names may be passed. The
name of the interpreter to be executed is CPM/CPM3.SYSTEM.

CONVERT

CONVERT.COM is a utility that converts files from ProDOS to CP/M Plus or from
CP/M Plus to ProDOS. It also allows you to change the ProDOS directory prefix
and to generate a catalog listing of the ProDOS directory.

To execute CONVERT.COM, type CONVERT at the A> prompt. The display will
indicate the following:

CP/M -> ProDOS File Conversion
This indicates that the direction of transfer is initially set up to convert
CP/M to ProDOS. This may be changed by using the T option as explained below.

Prefix /P/CPM
This display may be different on your system if you have a hard disk and have
not changed the prefix with the P option as explained below. Generally a "/"
followed by the name of the ProDOS volume that CP/M was booted from should be
displayed after the word "Prefix". Then a "/" and "CPM". "CPM" is the ProDOS
subdirectory that CPM was loaded from.

Below this header information are listed the options that may be chosen for
CONVERT. These options are as follows:

P - Set ProDOS prefix
This option allows the user to change the ProDOS prefix. Changing the Prefix
allows files to be transferred to and from different volumes and
subdirectories. This also controls which directories are displayed with the C
option as explained below.

C - Catalog display
This option causes CONVERT to display the catalog for the current volume and
subdirectory as selected with the P option.

D - Change Direction of Transfer
This option causes CONVERT to change the direction in which the files are being
transferred while using the T option. It also provides a header display that
reflects the current direction of transfer.

T - Transfer Files to ProDOS (or to CP/M)
This option allows you to enter the name of a ProDOS file to be transferred to
CP/M or, depending on the direction of transfer, from CP/M to ProDOS. In either
case, CONVERT will prompt for "Input file:". This is either the pathname of a
ProDOS file or a CP/M filename (depending on the currently selected direction
of transfer). CONVERT will then prompt for "Output file:". This is either the
pathname of a ProDOS file or a CP/M filename. In either case, the filename must
obey the rules of the system that you are transferring to and from. Finally,
CONVERT will ask "Is it text?" This lets CONVERT know how to treat carriage
return/line feed sequences, end-of-files, and, for ProDOS, the file type. Just
answer Y or N. CONVERT will continue to prompt for files to be transferred
until you enter a null line (a carriage return).

Q - Quit
This option exits to CP/M

DATESET

This utility sets the CP/M date and time from the current ProDOS date and time.
If the ProDOS date and time have not been set, DATESET will attempt to execute
DATE.COM to set the date and time. It is suggested that a reference to DATESET
be included in PROFILE.SUB, particularly if there is a ProDOS compatible clock
card installed. CP/M time can be kept accurate by occasionally executing
DATESET from the A> prompt.

INITRAM

This utility searches for a ProDOS volume called /RAM. When it finds /RAM, a
file called SYSTEM will be created on the current volume and a CP/M directory
will be initialized in it. This volume then becomes a 60K RAM disk referenced
as D: on the hard disk system and as E: on the floppy system. Once the RAM disk
has been initialized, any files placed there will remain intact until the
computer is turned off or reset. Therefore, you may initialize a RAM disk with
/RAM, copy files to it, return to ProDOS, go back to CP/M and your files will
still be intact.

When CP/M boots, it looks for /RAM/SYSTEM and when it finds it, accepts the RAM
disk as one of its volumes as described above. INITRAM need only be executed
once to set up the RAM disk. After that, CP/M will accept it each time it
boots. Remember that turning off the power or resetting the Apple will destroy
the RAM disk and you must execute INITRAM the first time CP/M is booted.