PowerPAINT

The Graphics Processor

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Digital Express

A WORD FROM THE AUTHOR

The completion of PowerPAINT marks my second year of programming. The program itself took about four months to complete with the last few weeks involved chiefly with debugging. It is, by far, my most extensive work to date. The program itself is a little over 80K (written in machine code) and it uses just about 144K of RAM on the low side. If you have larger than a 64K expander installed, it will use about 184K of RAM for the program permitting the remainder to be employed as a fast access ramdisk.

To the best of my knowledge, it is the most comprehensive graphics program available for the ADAM computer. When I first got my ADAM, Coleco was intending to release the "SmartPICTURE Processor" (of course they dropped the project); hopefully, you'll consider this package to be as high in quality as a Coleco program. It even uses SmartKEYS at the bottom of the screen just like their programs; indeed, nearly everything I've learned about Z80 programming has been gleaned from studying disassemblies of their programs.

I'm a self-educated programmer (I don't have a college degree in programming and I'm certainly not over endowed intellectually). Everything I've learned regarding computers, of which PowerPAINT is a product, I've picked up from liberal experimentation and studying the works of others. My techniques are a little unorthodox, to say the least.

I started programming in BASIC. It wasn't long at all till I was frustrated with the limitations of a high level interpreter; thus began my plunge into machine code programming. I started by writing short routines from BASIC. I just started typing numbers in DATA statements; when I've got one or two "K" of the decimal numbers entered I write the sectors to disk. I continue like this until a program is complete.

In the final weeks of development I had to winnow out nearly 10K of the program to get it all to fit in RAM at one time. Most noteworthy of the stuff that had to go was my enlargement routines. With all the other features I don't think you'll really miss this one aspect though. I hope you find the program useful and enjoyable for years to come.

Solomon Swift

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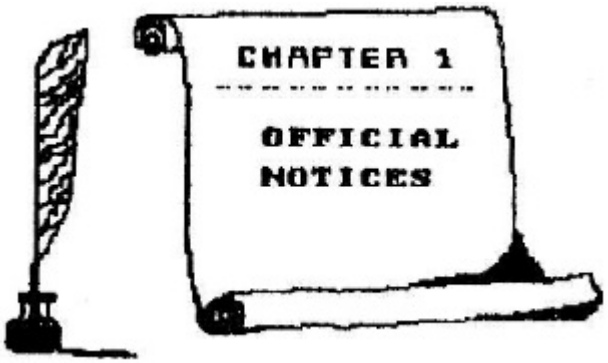

PRODUCT COPYRIGHT

It is recommended that you make at least one archival copy of the software medium prior to the first use. There are numerous utility programs available which accomplish this backup task, both commercial and in the public domain.

SERIALIZED SOFTWARE

You'll note that the label on your PowerPAINT disk or data pack lists a serial number for product identification. A coded version of this number is also stored on the electronic medium itself – in several places.

PUBLIC DOMAIN FILES

A few of the files on this medium are not copyrighted. These programs, itemized in Chapter Four of the manual, are hereby, if not heretofore, donated to the public domain.

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SPECIAL THANKS

The drawing of the ADAM system on the second title screen that you see while the program is loading into RAM is a modification of a public domain contribution by Bryan Payton. The double sized and double width special characters used within the program are minor modifications of two public domain contributions by Guy Cousineau. The two art brush files contained on the PowerPAINT medium were designed on a public domain program by Guy Cousineau entitled SHAPEMAKER.

WHAT YOU WILL NEED

✔ You will need an ADAM™ computer with a "revision 80" memory console. To verify your revision of the memory console, simply press the "R" letter key while holding down the "CONTROL" key in the "ELECTRONIC TYPEWRITER MODE". The number will be displayed as the label for the Roman numeral SmartKEY IV.

✔ You will need revision 79 SmartBASIC v1.0 to RUN or BRUN the BASIC public domain programs contained on the medium. To ascertain your version of the interpreter, enter PRINT PEEK (260) after loading SmartBASIC. For more information regarding the PD files, see Chapter Four of this manual.

✔ You will need a TV or compatible monitor, preferably color.

✔ You will need to have a memory expander installed; PowerPAINT is too large a program for ADAM's standard 80K of RAM. You need at least a 64K expander. A larger memory board provides even more features to the program. You may use an Orphanware compatible 128K, 256K, or 512K board.

✔ To print the graphics you will need a Centronics parallel interface which handles I/O through port 64. The Orphanware PIA2 and the Eve Electronics SP-1 and SP-1P each access this port address. You should have an Epson FX or IBM 5152 compatible dot matrix printer. With the included ability to customize the graphic control codes to the printer, the program could be modified to print the graphics on virtually any dot matrix printer that has "at least" an 8-pin print head.

✔ You can use the program with as little as the standard system plus a 64K expander. But you will, no doubt, find it more enjoyable with a Centronics interface and compatible printer. The program supports one or two data drives, one or two disk drives (160K, 320K, or 720K – any combination). It also supports the Eve Electronics SS/CC Speech Synthesizer with a brief message option. And, as discussed above, the program supports any size of Orphanware compatible memory expansion board. PowerPAINT is a program that will grow with your system.

LOADING PowerPAINT

The PowerPAINT electronic storage medium includes a number of files. The primary program is entitled "paint.obj" (actually the object code is segregated into four files because it is too large to load all at once). This is a machine language program; it does not require, nor use, SmartBASIC for operation. The BASIC "CATALOG" command won't reveal this or its supporting files.

Before you can use the program, you must transfer it from disk or data pack into ADAM's memory. This is called **loading** or **booting** the program. Once the program is loaded, it will stay in memory until you choose to exit with the software option, press Computer Reset, or power down the system.

Refer to the following diagram for loading PowerPAINT from a didital data pack; refer to your disk drive operator's manual for loading from a disk.

POWER SWITCH INSERT DIGITAL DATA PACK COMPUTER RESET

DO NOT REMOVE DATA PACK WHILE THE DRIVE IS OPERATING!
DO NOT TURN POWER ON OR OFF WHEN A DATA PACK IS IN THE DRIVE!

DETAILED LOADING PROCEDURE

1. Turn ADAM on (by pressing the power switch located on the back of the ADAM printer).
2. Turn on your TV or monitor.
3. If you have disk drives, turn on the power to them.
4. Insert PowerPAINT into one of the drives.
5. Close the drive door. Now, press Computer Reset.
6. Within a couple of seconds a title screen will appear while a simple melody plays. In a few moments the second title screen will appear as the remainder of the program loads into ADAM's memory. When the entire file is loaded, the music will stop, and the graphics will clear to reveal six six SmartKEYS at the bottom of the screen.

A QUICK OVERVIEW

Graphics design is one of the hottest topics on any computer; ADAM is certainly no exception. PowerPAINT provides you with many design tools and capabilities that had previously been reserved almost exclusively for the 256K family of computers. In this respect, PowerPAINT is rather unique for software designed on a 64K computer (actually ADAM is an 80K system, but 16K is indirect video RAM).

ADAM, however, has two shortcomings. One is that Coleco dropped it from production – this caused the major software companies to shun it as an outcast. In reality, however, it is quite possibly the best designed of the 64K computers. It is because of this unusual potential that software and peripherals continue to be developed for it. It is estimated that there are nearly a quarter million active ADAM users throughout the world.

The other shortcoming is ADAM's video chip. The chip has its own 16K of RAM which frees standard RAM in hi-res modes. But the difficulty arises from the fact that in hi-res mode the chip can only plot two colors per 8 horizontal screen pixels (starting at the left edge of the screen) – one foreground and one background. This problem is commonly referred to as *color bleeding*. Each of the computers in the 64K family has its own problems with hi-res and color – this is simply the one that ADAM has.

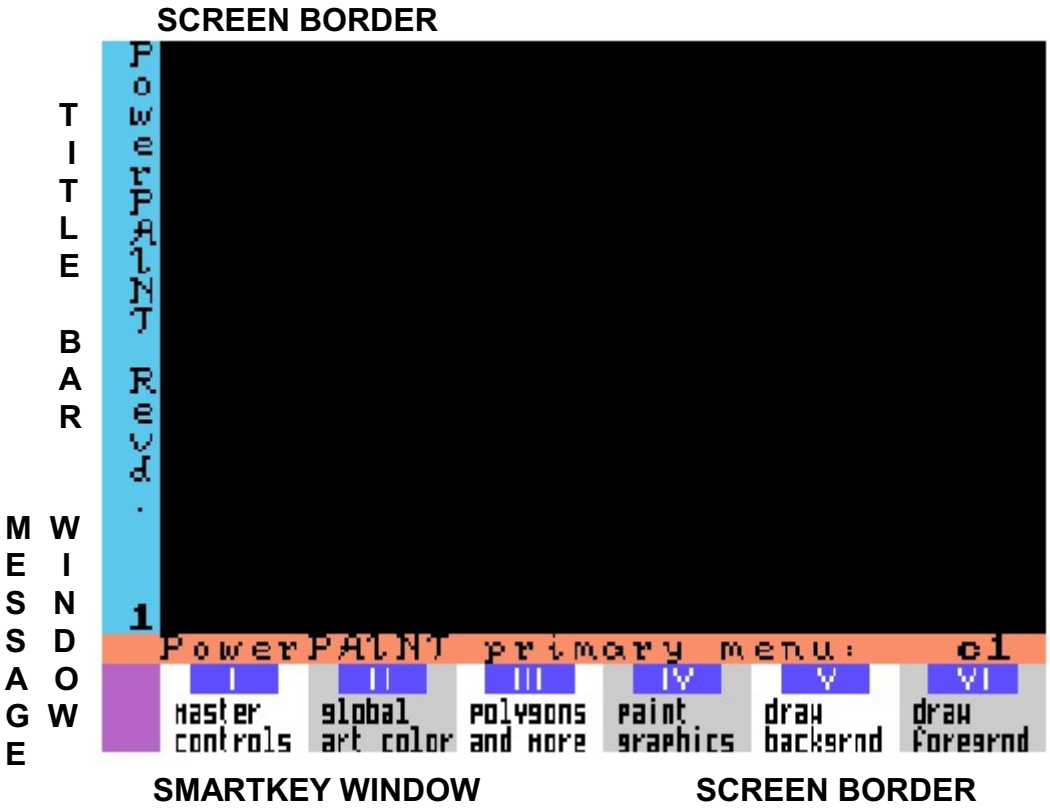
We have gone to great lengths within PowerPAINT to both work around this limitation and to take advantage of it. To work around it, most features involve using at least eight screen pixels. To take advantage of it, we have given you access to design in the background as well as the foreground.

Yes...PowerPAINT gives you the standard feature of foreground drawing as well as the unusual aspect of background coloring. The program allows you to use clip art files "captured" or "drawn" with our CLIPPER commercial title. It even lets you use sprite sets (stored in SpritePOWER format) within the program as a miniature clip art or as replacement graphics paint brushes – it gives you 14 of the most popular graphics paint brushes, too. Paint brushes are great tools for filling large areas with a particular pattern. Paint brushes may also be overlaid to create an almost unending variety of designs. PowerPAINT includes eight sets of characters for inserting text into your designs – four may be rotated, overlaid, or used as standard replacement text. The other four are in FontPOWER format; in fact, you can even load additional font sets created with FontPOWER (another Digital Express program). PowerPAINT also allows you to move, copy, and erase sections of your pictures.

GRAPHICS SCREEN SIZE

The monitor or TV screen used for visual output by a computer is said to be composed of pixels, or Picture Elements. ADAM's screen is 256 pixels horizontally by 192 pixels vertically. The illustration below reveals how we've segregated this screen – our graphics design area is 240 pixels across by 160 pixels down providing for additional program information on the screen with your graphics creations. We

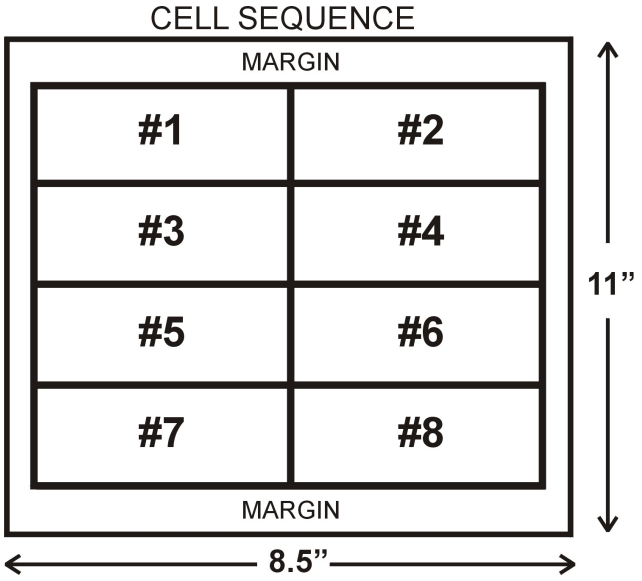
refer to this region as the GRAPHICS SCREEN. At the very top and bottom of the screen are the borders. The video chip does not permit graphics within the border; however, it does allow for color changes of the border – PowerPAINT takes advantage of this feature. To the left of the GRAPHICS SCREEN is the TITLE BAR – the background of the title bar is the same color as the border. Just beneath the GRAPHICS SCREEN is the MESSAGE WINDOW. The MESSAGE WINDOW contains information pertinent to program operation – text is black on a light red background. Below this is the SmartKEY WINDOW. Here the six Roman numeral function keys (at the top of the keyboard) are identified with corresponding function descriptions.



One of the chief aims of computer graphics design programs is to allow the user to print his creations on paper. As such, a 240 (or 256) pixel screen is rather restrictive. PowerPAINT compensates for this by allowing you to create pictures that are larger than one screen. A workplace picture is 480 pixels across. In bit for bit correspondence this picture width prints out as eight inches – perfect for standard sized printer paper. The length of the picture will depend on the size of the memory expansion card plugged into slot three inside the console. With the common 64K expander, your picture length will be 320 pixels. With a larger expander (Orphanware compatible), your picture length will be 640 pixels. This prints out at just about nine inches, leaving a one inch margin (top and bottom) on standard sized printer paper.

Thus, a picture is two screens wide. And, it is either two or four screens long depending on the size of your memory card. To facilitate drawing and permit the UNDO function, however, most features are limited to designing one screen at a time. A scroll option is provided which allows you to see the entire picture on screen in a better perspective.

We refer to each screen of a picture as a CELL. These cells are numbered horizontally and then vertically with CELL #1 as the upper lefthand corner. The illustration below further describes the sequence of the cells. It is VERY IMPORTANT to note that the odd numbered cells constitute the left side of a printed page and the even numbered cells constitute the right side of that page. Even though PowerPAINT does not have any of the standard word processing features included, it is readily available for use as a primitive page design program.



USEFUL DEFINITIONS

BIT IMAGE: Everything that you see on your TV or monitor screen displayed by ADAM is generated by dint of bit image graphics. The screen is composed of 256 by 192 dots, or bits. When a dot is on (displayed), its bit value is one. When a dot is turned off (not displayable), its bit value is zero. Since ADAM's brain, a z80A microchip (and the video chip), is an 8-bit processor, every eight bits (starting at the upper left image of the screen) are grouped into a specific quantity called a BYTE. A collection of these bytes, whether "1" or "49152" is labeled a bit image. Additionally, ADAM's video chip assigns color data which corresponds to the bit image data.This graphics color data (GCD) permits two colors per bit image byte, one foreground color and one background color.

CLIP ART: Clip Art is generally a file containing a "clipped" segment of a larger hi-res picture. In the widely varied home computer industry there is no set standard for the pixel dimensions of a clip art picture. However, a 64 pixel by 64 pixel image is generally considered to be the more common format. With ADAM this particular size is also very convenient as one file occupies exactly one "K" (1024 bytes) of RAM (Random Access Memory, user memory) – 512 bytes is used for the bit image and 512 bytes is used for the graphic color data (GCD). We have another program for ADAM entitled CLIPPER which allows you to clip, edit, and design clip art files in this format. PowerPAINT can load anu CLIPPER compatible clip art file.

KEYCLICK: Throughout the PowerPAINT program various sound effects and tones are employed. Most of these are heard as the result of pressing certain keys. Keyclick is the technique of using arbitrary sounds to signify acknowledgement of keypresses.

MENU: As is the case with a restaurant menu of its specific cuisine, a software menu is a collection of available options. PowerPAINT's primary menu (the one that you see when the program is first loaded into memory) consists of six SmartKEY options – each option, in turn, presents its own menu of sub-options. Pressing <ESCAPE> at virtually any point within the program will abort the current activity; it will take you back to the previous menu or the primary menu.

OVERLAY GRAPHICS: In computer graphics design there are two primary means by which you can effect drawing changes. One is referred to as "replacement graphics". Quite simply, replacement graphics supplant the previous design at the particular picture coordinates. Clip Art, sprite art (miniature clip art), and normal text entry are example of replacement graphics.

"Overlay Graphics" allow you to draw atop existing designs. The paint brushes used by PowerPAINT provide this powerful creative element. Brushes may be overlaid with one another (or existing graphics) to design quite a variety of patterns. Overlay graphics are chiefly concerned with foreground drawing – this technique will NOT affect background coloring.

PAINT BRUSH: Paint brushes are graphic designs which allow you to easily fill an area of a picture with a particular pattern. One of the nicest features of paint brushes is the graphics overlay capability.

SmartKEY: SmartKEY is the term that Coleco assigned to the six function keys on the top row of the keyboard designated by Roman numerals. You direct the

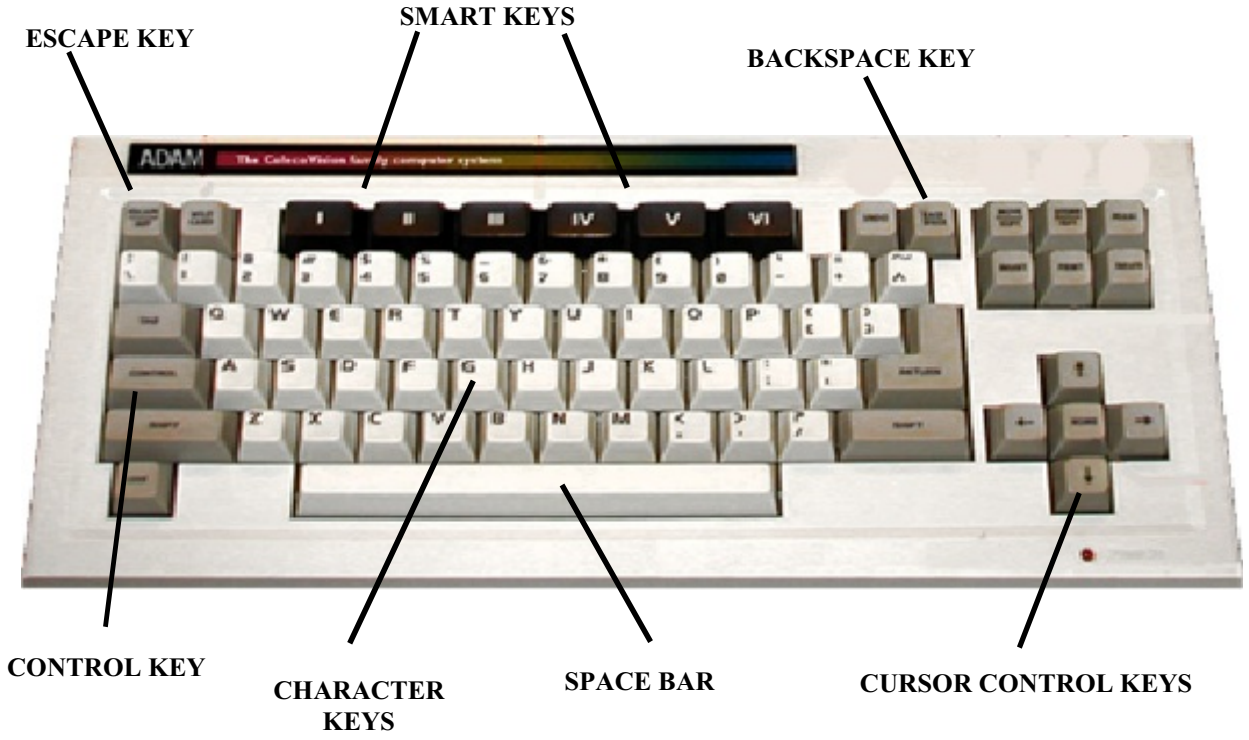
PowerPAINT program, in part, by pressing certain SmartKEYS. The corresponding function, within a particular menu, is revealed in the SmartKEY window at the bottom of the graphics screen.

TOGGLE: Some of the PowerPAINT controls are selected by pressing a specified SmartKEY to turn the particular feature "on" or "off". This process, analogous to flipping a light switch, is referred to as "toggling" the control.

WRAPAROUND: There are several points within the PowerPAINT program at which you may relocate the screen position indicator, called a cursor, with the arrow keys (or the joystick), eg, drawing on the foreground, painting with the brushes, etc. When moving this position indicator a "wraparound" feature is employed (in most cases). Thus, if you attempt to move the cursor beyond one border of the graphics screen, the cursor will automatically wraparound to the opposite edge. This feature is utilized for rapid cursor relocation.

USING THE KEYBOARD

You can control the PowerPAINT program by pressing ceratin keys on the keyboard. The following illustration depicts the standard ADAM keyboard; you may want to refer to it in reading the key descriptions on the next page.



BACKSPACE KEY: You may use this key or the left arrow cursor key to erase letters when entering a file's name for storing or renaming, or when entering the volume name for INIT (clearing the directory).

CHARACTER KEYS: You will use the character keys to enter filenames for storing or renaming.

CONTROL KEY: While drawing in the foreground or background, the **CONTROL KEY** may be used in conjunction with the arrow keys (cursor control keys) to move the cursor (or stylus) diagonally.

CURSOR CONTROL KEYS: The cursor (or arrow) keys are used to move the cursor within the graphics screen. They are also used to select files from the directory's file page. And, the left arrow key may also be used as a <backspace> when entering a new file or volume name.

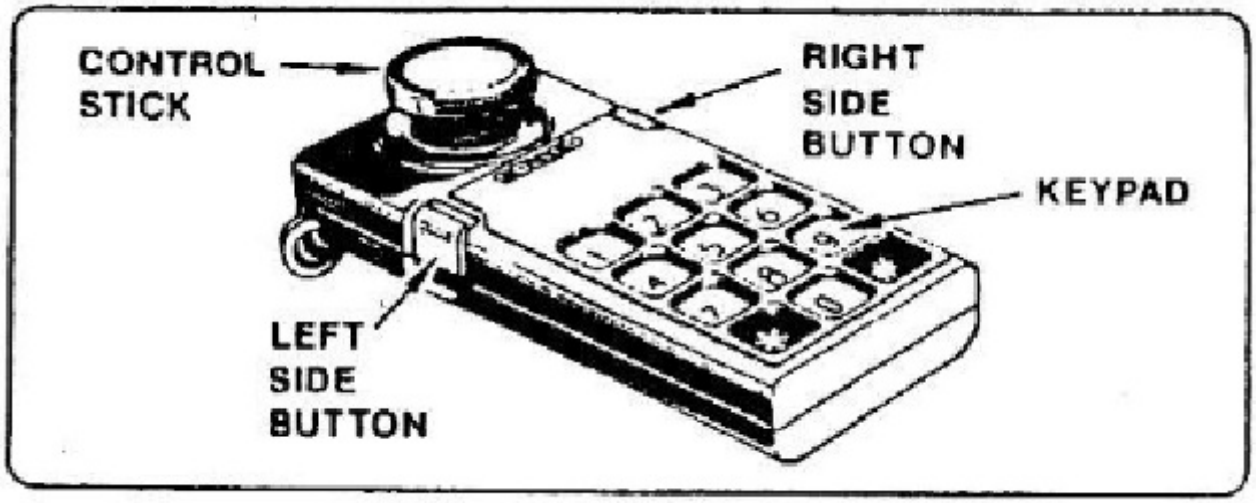
ESCAPE KEY: Throughout the PowerPAINT program you can branch program execution back to the previous or primary menu by pressing **ESCAPE**. This key is employed to "escape" the current action or menu.

SmartKEYS: These six keys are on the top row of the keyboard and are indicated by Roman numerals. They are used to control the primary functions of the PowerPAINT program.

UNDO: There are usually three ways to exit a particular menu of options: SmartKEY VI, ESCAPE, or UNDO. The first two will store any changes that you made to the screen. By pressing the UNDO key, you'll be given the option of "UNDOing" any changes. This will restore the screen to the condition it was in when you left the primary menu. Thus, if you make a lot of revisions to a picture, you may want to go back to the primary menu (via ESCAPE or SmartKEY VI) just to permanently store the present screen condition. This way, if you do make a graphic mistake, you can erase it (via UNDO) without erasing ALL the changes that you've made.

USING THE HAND CONTROLLER

The PowerPAINT program includes numerous innovations for the ADAM computer. One of these is its implementation of the game controller as a keyboard input alternative. You must, however, use the keyboard for entering text. You may want to refer to the illustration at the top of the next page to study the keyboard correspondences.



TRIGGERS
left side button = ESCAPE
right side button = RETURN

KEYPAD
The upper six numbers correspond to the Roman numeral SmartKEYS. The lower six hand controller keys correspond to the six labeled function keys on the upper right corner of the keyboard.

1 = I
2 = II
3 = III
5 = V
6 = VI

7 = MOVE/COPY
8 = STORE/GET
9 = CLEAR
* = INSERT
0 = PRINT
# = DELETE (same as MOVE/COPY)

CONTROL STICK

Joystick movement is in exact correspondence with the direction of movement on the screen. The diagonal control stick positions are employed when drawing in the foreground or background.

UP = up arrow
RIGHT = right arrow
DOWN = down arrow
LEFT = left arrow

UP/RIGHT = CONTROL + up arrow
DOWN/RIGHT = CONTROL + right arrow
UP/LEFT = CONTROL + left arrow
DOWN/LEFT = CONTROL + down arrow

KEYBOARD VS. KEYPAD

The game controller option is included for those who enjoy the convenience of using a "mouse". The response time of the keyboard, however, is a little faster. And, the keyboard makes use of ADAM's built-in multi-tasking ability, *ie*, you may enter keyboard inputs while other operations are in progress. It is recommended that you not take advantage of this feature until you are thoroughly familiar with the program. You could inadvertently clear the entire workspace (4 or 8 screens) while loading a picture file if you pressed the right sequence of keys while the drive was in operation.

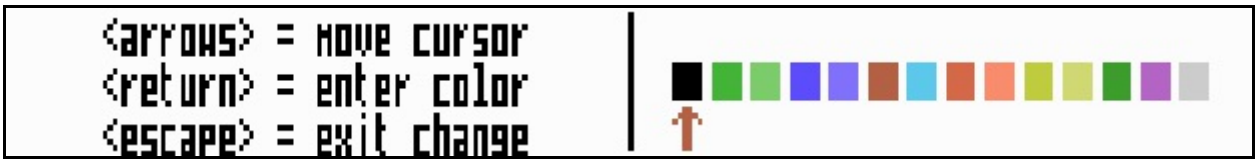
COLOR SELECTION TECHNIQUE

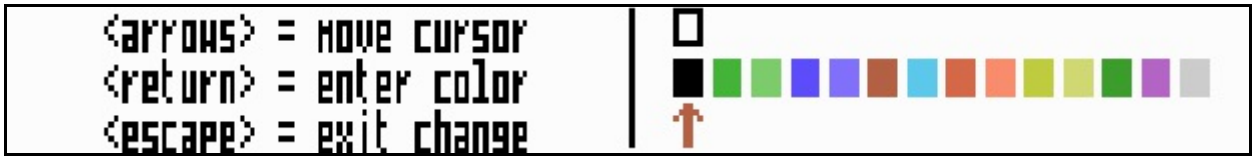
At many points within the PowerPAINT program you are given the option of changing a particular color (pen color, graphic foreground, graphic background, etc.). ADAM's video chip is equipped to handle 15 distinct colors. Of this spectrum, we have reserved "white" as a control color (the cursor is white) so that you can easily determine your graphic screen position.

The same menu appears in the SmartKEY window for each of these color changes; this is depicted in the first illustration below. On the right side of the window you'll see 14 small colored blocks each one corresponding to one of ADAM's video chip colors (in numerical not color sequence). Below these is a small cursor arrow. Use the left and right cursor control keys to position this indicator beneath the color that you want to select. Press <RETURN> when you are at the

desired color to implement the change. Press <ESCAPE> to abort the change and return to the previous menu of SmartKEY options.

In some cases you will be changing a pre-defined (or original) color value. In this circumstance a small hollow, black box will appear above the pre-defined or previous color value. The second illustration below reveals this.



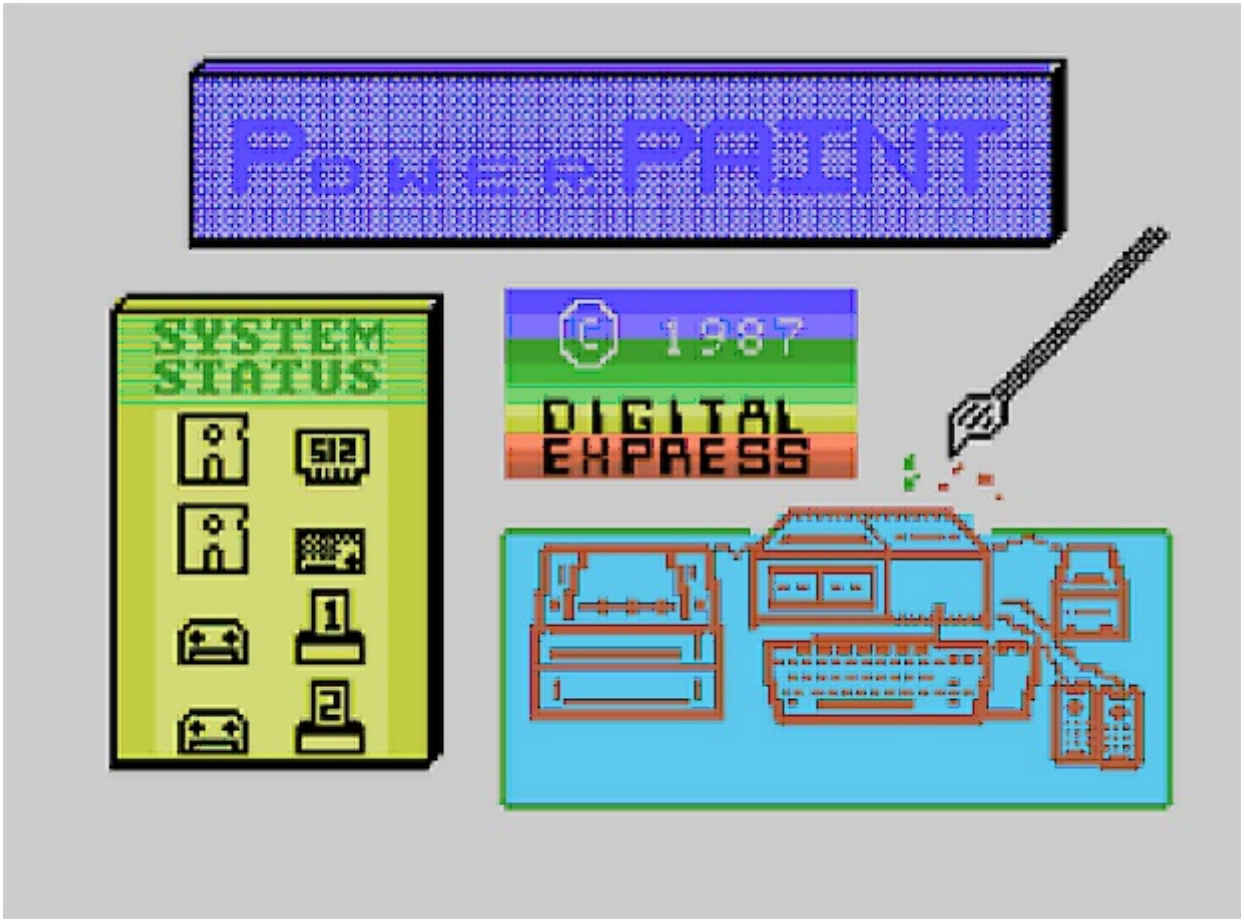


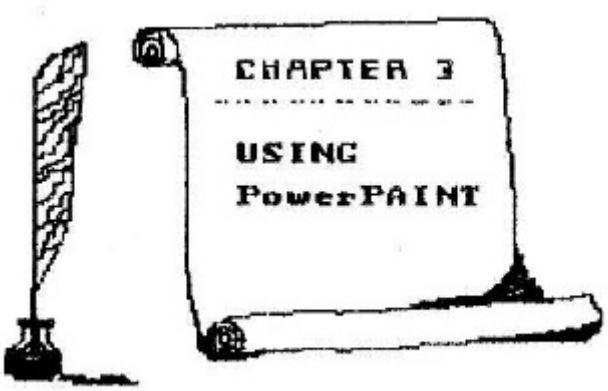
THE TITLE SCREEN

PowerPAINT shows two title screens while the program is loading into memory. The picture below depicts the second title screen – the first one is only displayed for a few seconds. On the lefthand side of the screen you'll see a box entitled "system status".

Two columns of (up to) four icons (small graphic symbols) are revealed dependent on the condition of your system. The left side is used for storage drives: disk one, disk two, data drive one, and then data drive two. If you don't have a particular drive connected (or turned on), the icon will simply be omitted.

The righthand column reveals the other accessible I/O (input/output) devices. At the top, the size of your memory expander is revealed. Below this, a keyboard should be displayed. The next icon slot is for the ADAM printer (with a number one); the last one is for a dot matrix printer (designated by a number two). If your second printer was not turned on when you pulled the computer reset, the icon for it will not be displayed. You may, however, turn it on later for generating hardcopies of your creations.





THE PRIMARY MENU

When PowerPAINT is finished loading into ADAM's memory, the title screen clears and you'll see the six SmartKEY options displayed at the bottom of the screen. This is the primary menu (the message window also apprises you of this). This is the central control for the program. And, at virtually any point within the program you can press the <ESCAPE> key to come back to this menu (with some sub-menus, you may have to tap <ESCAPE> two or three times though).

From the primary menu you have 22 different courses of action to choose from. All of these are discussed in this chapter; we'll look at the simple ones first moving onto the more involved sub-menus. Here are the primary courses of action:

ESCAPE ..... exits the program
WILDCARD ..... "speak" message

I ..... master controls
II ..... global art color
III ..... polygons and more
IV ..... paint graphics
V ..... draw background
VI ..... draw foreground

MOVE/COPY ..... move, copy, erase, and scroll options
STORE/GET ..... access storage media
CLEAR ..... clear the cell or workspace
INSERT ..... enter text on the graphics screen
PRINT ..... assorted hardcopy options
DELETE ..... the same as MOVE/COPY

Also, you can press any of the number keys (1 - 8) ON THE KEYBOARD to change the number of the CELL currently being displayed. When you LEAVE the primary menu, you WILL BE ACTING upon the CURRENTLY DISPLAYED cell.

From the primary menu, the cell number is displayed at the right side of the message window. Throughout the remainder of the program (except for the file access series of menus) the cell number is also revealed at the bottom of the TITLE BAR. Keeping up with the current cell number is VERY IMPORTANT, particularly when you first start using the program – be sure that you understand the hardcopy sequence of the cells (discussed on page eight).

ESCAPE

Pressing ESCAPE from the primary menu will allow you to exit the program. You will be asked if you really want to reset your system and given the following two SmartKEY options.

Selecting SmartKEY V, "NO" will return you to the primary menu. Pressing SmartKEY VI, "YES", is much like pulling the computer reset switch; however, it will lock up the system if all the drives are empty. You should, therefore, insert a disk or data pack that you want to boot into one of the drives before selecting "YES".

WILDCARD

If you have the Eve Electronics Speech Synthesizer connected to your ADAM, pressing WILDCARD from the primary menu will cause your ADAM to speak a simple message, "PowerPAINT by DIGITAL EXPRESS – designed for the ADAM computer". If you don't have the EVE SS/CC unit connected, an error buzz will sound when WILDCARD is pressed.

CLEAR

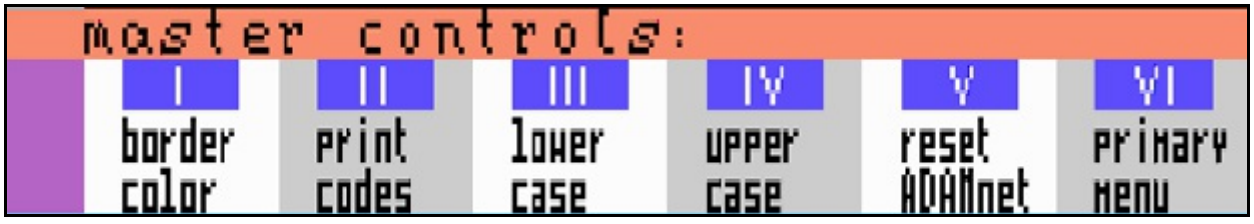
Pressing the CLEAR key from the primary menu will give two options to WIPE OUT graphics. The choices are revealed in the illustration below.

Pressing SmartKEY IV, “CLEAR CELL”, will only clear the currently displayed cell. Pressing SmartKEY V, “CLEAR WORKSPACE”, will clear the entire workspace (picture) of eight screens (four screens with a 64K expander) – regardless of the currently displayed cell number, the “clear workspace” option will reset the cell number to “1" (as when the program was first booted). SmartKEY VI, “PRIMARY MENU” allows you to abort the two clear options; ESCAPE may also be pressed to return to the primary menu.

Use the clear options with EXTREME CARE – there is no corresponding UNDO command!! Clearing erases ALL foreground drawing and restores the background color to black.

(I) MASTER CONTROLS

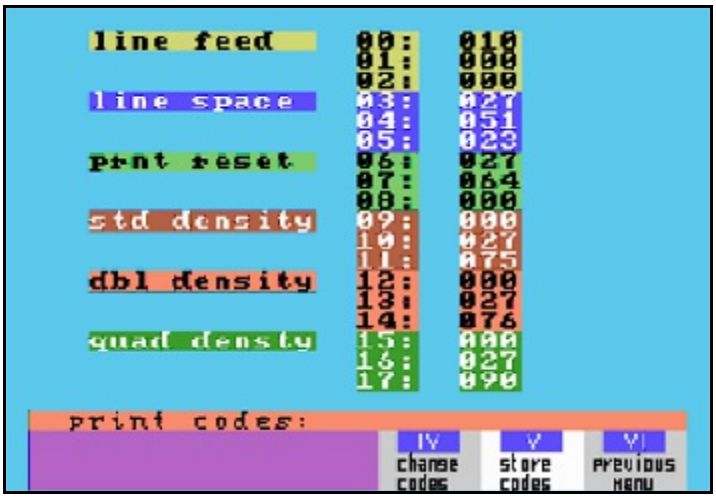
Pressing SmartKEY I, “MASTER CONTROLS”, from the primary menu presents you with six options to change aspects of the program itself. The illustration below reveals these.



SmartKEY I, “BORDER COLOR”, lets you select the border color of your preference. Selection is made from the standard color selection menu giving you 14

colors to choose from. With the light colors, the title bar text is black; with the dark colors, the title bar text will be changed to white.

Pressing SmartKEY II, "PRINT CODES" gives you the opportunity to alter the hardcopy print routines of the program. The graphics screen will clear to reveal the following six commands with three control bytes each.



The screen version is color coded for simplicity of operation. The three columns are: function name, byte number, and current code value. These are the ACTUAL codes used by the PowerPAINT routines – do NOT change these unless you have a reasonable understanding of the manual which came with your printer.

Below this chart, three SmartKEYS are revealed. The following illustration depicts these.

To change codes, just tap SmartKEY IV, "CHANGE CODES". You will be prompted to enter a byte number (from the center column). Then you are asked to enter the new value – just type it in. Upon pressing the <RETURN> key, the chart value (on the screen) will change and you are prompted to enter another byte number.

This cycle repeats itself until you press the <ESCAPE> key; upon doing so, you are returned to the three “print code” SmartKEYS. If you are satisfied with the codes, insert the PowerPAINT medium into THE DRIVE THAT IT WAS BOOTED from and press SmartKEY V, “STORE CODES”. The codes will be written to the medium so that they will be in effect any time you boot the medium thereafter.

This rather unique custom print code feature should allow the program to work with any parallel accessed dot matrix printer that has at least an 8-pin print head. If at all possible, you should try out the codes (by printing a screen) before writing them to the disk or data pack.

The positioning of NUL’s (zeros) within the 3-byte codes is VERY IMPORTANT. With the density selection, for example, placing the NUL after the two significant control bytes will offset your hardcopies.

The menu of actual PRINT OPTIONS allows you to reset the printer by just tapping a SmartKEY. You might, therefore, want to change byte #008 of the control code data table to a “012". This way, you can both reset the printer and form feed the current sheet by tapping that SmartKEY. Note that you must vertically align form-feed paper in order for the function to bring the end of the sheet to the proper point.

On some printers, you may need to set the second byte of the line feed code (byte #001) to a CR (013) in order for the printer to recognize the LF (010) command. Also, all dot matrix printers with at least an 8-pin print head require two additional bytes after the density code is transmitted to the printer. PowerPAINT automatically takes care of this calculation for you. Standard density is set for 60 dots per inch, double density is set for 120 dots per inch, and quadruple density is set for 240 dots per inch.

The line space code is measured in 2/16ths of an inch. Ideally, it should be “24" (byte #005). But many printers space better at the default setting of “23". You may certainly change this value to your preference. However, it MUST BE SET to “23" for printing labels. The PRINT OPTION to do hardcopies stretched in length uses its own line space values so that your settings will not affect that special hardcopy option.

The standard density code is used for “quick draft” and “light copy” print options. The double density code is used for most “dark copy” print options. The quadruple density option is ONLY used by the “dark copy” option for a single screen.

Pressing SmartKEY III, “LOWER CASE” from the MASTER CONTROLS menu will change all the SmartKEY labels to lower case. Pressing SmartKEY IV, “UPPER CASE” will change all the SmartKEY labels to upper case. This feature is provided in order that the user may select the most legible option.

Pressing SmartKEY V, “RESET ADAMnet”, from the MASTER CONTROLS menu will perform the obvious function. The primary advantage of this feature is that it allows you to logon a disk drive that was turned off when you booted the system. Just turn it on and tap the SmartKEY.

Pressing SmartKEY VI, “PRIMARY MENU”, will simply return you to the primary program control menu. Tapping the <ESCAPE> key will also take you back to the primary menu.

(II) GLOBAL ART COLOR

Pressing SmartKEY II, “GLOBAL ART COLOR”, from the primary menu will take you to the six global (for the currently displayed screen; not the entire workspace) color change options. These are depicted in the illustration below.

The first option here, “REVERSE SCREEN”, is a specialized function to transpose the background and foreground, both in bit image graphics and graphic color data (GCD). The screen will flicker very briefly and the change is done. The picture won’t appear to be any different, however. The function is included as a printing feature. This also provides a convenient method of actually drawing in the background – for advanced users of the program.

The second option, “GLOBAL BACKGROUND”, will allow you to change the entire background color of the screen. The third option, “BACKGROUND SWITCH”, permits you to change one screen background color to another. You’ll be prompted to point to the original color (in the color selection menu at the bottom of the screen) and then to select the new color.

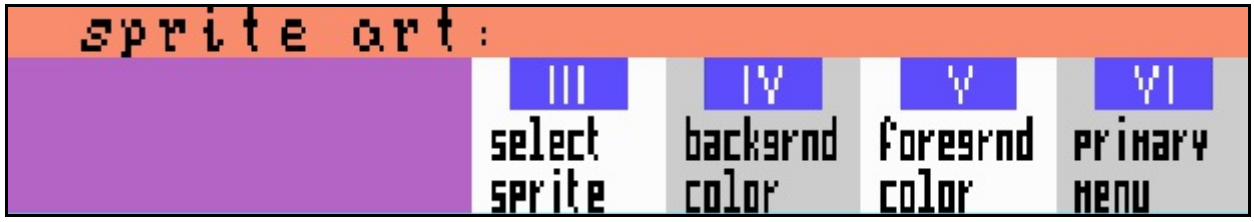
The fourth option, “GLOBAL FOREGROUND”, will allow you to change the entire foreground color of the screen to your choice. The fifth option, “FOREGROUND SWITCH”, permits you to change one screen foreground color to another. You’ll be prompted to point to the original color and then to select the new color.

Pressing SmartKEY VI, “PRIMARY MENU”, or <ESCAPE> will return you to the primary menu keeping the color changes in effect. You may also press UNDO to return to the original colors. You are asked if you really want to UNDO the changes by tapping either a NO (V) or a YES (VI) SmartKEY – pressing <ESCAPE> at this point is the same as entering “yes”.

(III) POLYGONS AND MORE

Pressing SmartKEY III, “POLYGONS AND MORE”, from the primary menu presents you with six more courses of action. The illustration below depicts these.

Selecting SmartKEY I, “SPRITE ART”, from this menu allows you to use the miniature clip art in your picture. The following menu of four options is revealed.



This special clip art is 16 pixels by 16 pixels – the bit image data of a sprite set (stored in SpritePOWER format). You may change the background and foreground color with SmartKEYs “IV” and “V”.

SmartKEY III, “SELECT SPRITE”, will permit you to scan through the set of 32 sprites. In this scan - to - select mode, the sprites are displayed in the SmartKEY window (one at a time) where the 6th SmartKEY is normally shown. You can scan

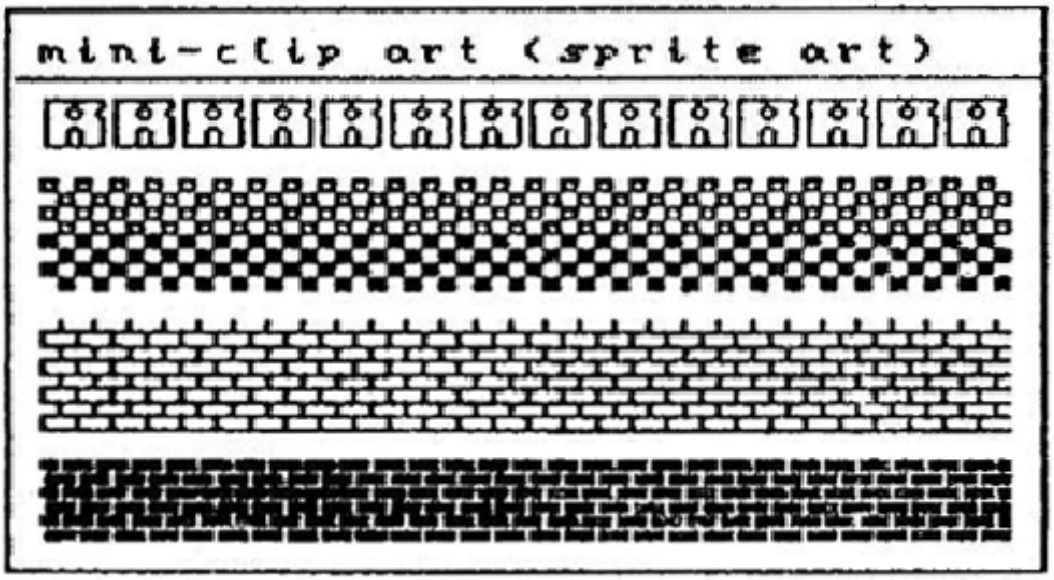
through the set with the up and down arrow keys – the current sprite number is also revealed. Press <RETURN> to select the current sprite. Press <ESCAPE> to abort the selection.

You can move the sprite around on the screen with the arrow keys. When you have it in a location that you want to place the particular design, just press <RETURN>. You may do this as many times as desired. You'll note that the arrow moves the sprite in 8-pixel increments. Some sprite art looks better placed 8 pixels apart, other art looks better 16 pixels apart – some is designed specifically for 16 pixel increment design.

NOTE THAT as you enter the "SPRITE ART" menu, the sprite always starts at the upper left corner of the screen. You can exit back to the primary menu leaving the art in place by tapping <ESCAPE> or SmartKEY "VI". You can UNDO all the "SPRITE ART" changes by pressing the UNDO key.

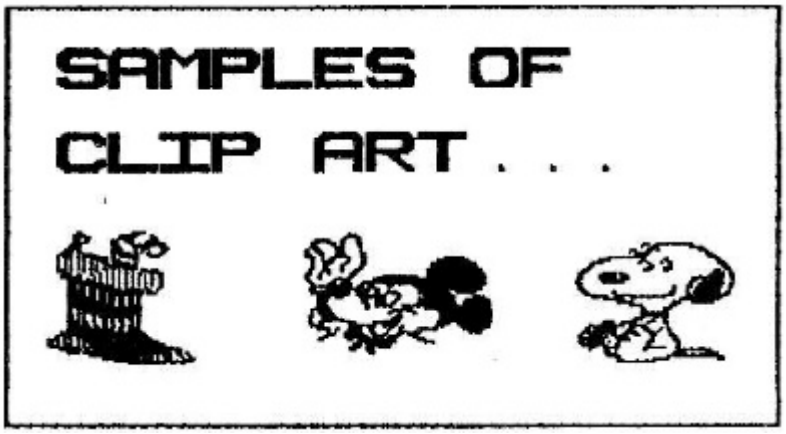
Sprite art can be used as CAD (Computer Aided Design) elements or as replacement graphics paint brushes. With the CAD possibility, you could design a set of architectural drafting or electric schematic symbols (with SpritePOWER or a compatible program) and then place them at appropriate points within a picture. With the paint brush perspective, you can fill a large area of your picture with a specific pattern.

PowerPAINT comes with two sprite files stored on the medium; one of these is already in RAM when PowerPAINT is loaded. It includes several popular patterns, including a disk and empty and filled brick wall segments. Just chain them together for a very nice visual effect. Consider the following illustration.

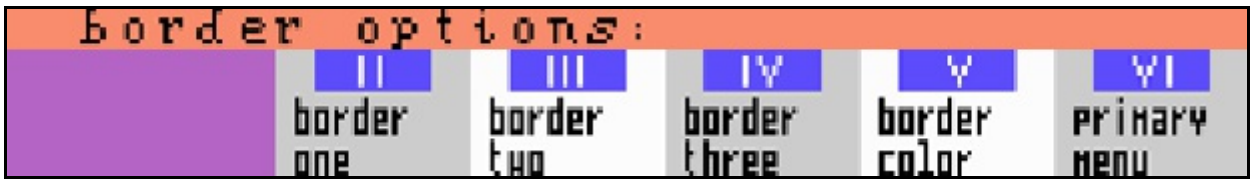


Pressing SmartKEY II, "CLIP ART" from the POLYGONS AND MORE menu allows you to use clip art in your picture. The current clip art file will be displayed at the upper left corner of the screen; you can move it around to position it with the arrow keys. When you have it at the appropriate spot, just tap the <RETURN> key to put it down. Press <ESCAPE> to leave the clip art module. You'll then be asked "Is This Okay?" – with NO and YES choices. This is a variation of the UNDO option used in most other parts of the program.

PowerPAINT comes with four clip art files. One of these is already in RAM when the program is first booted. The illustration below shows you some clip art. As noted earlier in this manual, the clip art files must be CLIPPER compatible.



SmartKEY III, "BORDER CHOICES", from the POLYGONS AND MORE menu presents the following SmartKEY menu of options.



The "border one" option draws a border at the very edges of the screen. The "border two" option draws a border three pixels in from the screen edges. The "border three" option draws a border six pixels in from the screen edges. SmartKEY "V" allows you to select the color that the border will be drawn in.

Pressing <ESCAPE> or SmartKEY "VI" will return you to the primary menu leaving the borders on the screen. Pressing UNDO will return the screen to its previous condition.

Pressing SmartKEY IV, “DRAW POLYGONS”, from the POLYGONS AND MORE menu presents the following SmartKEY choices.

With the “FOUR SIDED” option, you just point to four coordinates and ADAM draws the quadrilateral; you can abort the process and return to the DRAW POLYGONS menu by tapping <ESCAPE>. The “THREE SIDED” option, is very similar – the difference is that a single triangle is drawn.

With the “STRAIGHT LINE” option the program just keeps asking you to point to a second point. This permits you to easily draw a continuous group of connected lines. To abort this cycle, just tap <ESCAPE> and return to the DRAW POLYGONS menu.

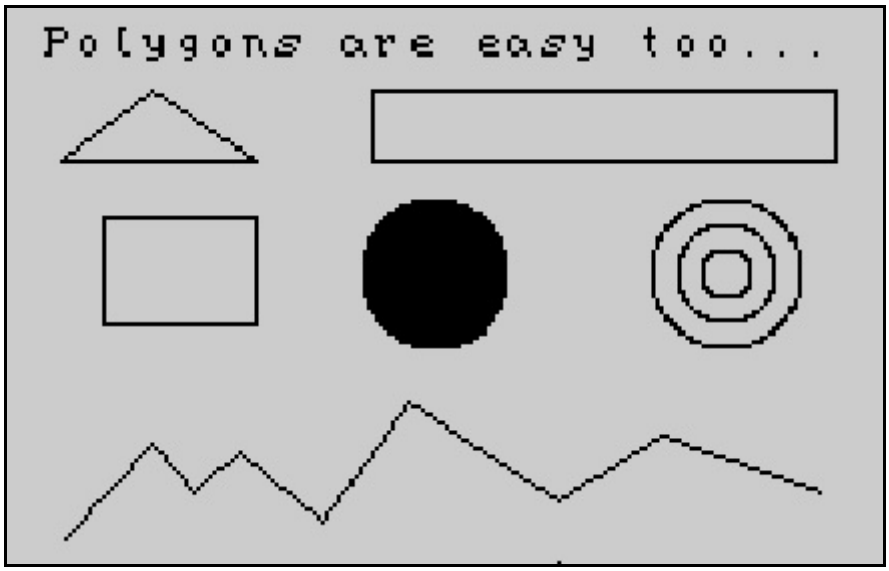
SmartKEY IV, “DRAW CIRCLE”, from the DRAW POLYGONS menu presents the following options as seen in the illustration below.

You just point to the center of the circle and press <RETURN>, as with the

other polygon options. Rather than point to a circumference point, the program asks for the radius (half the diameter in pixel length). In seconds the circle is drawn – empty or filled based on your SmartKEY selection.

SmartKEY V, “POLYGON COLOR”, from the DRAW POLYGONS menu allows you to choose your color preference. Upon tapping SmartKEY “VI” you are asked if the results are OK. If you reply with “NO”, any polygons drawn are erased and you are returned to the DRAW POLYGONS menu. You must answer “YES” (or press <ESCAPE>) to the question in order to return to the primary menu.

The picture below is a simple illustration of polygon designs with PowerPAINT.



Pressing SmartKEY V, "VCR BLANK", from the POLYGONS AND MORE menu presents the following SmartKEY options.

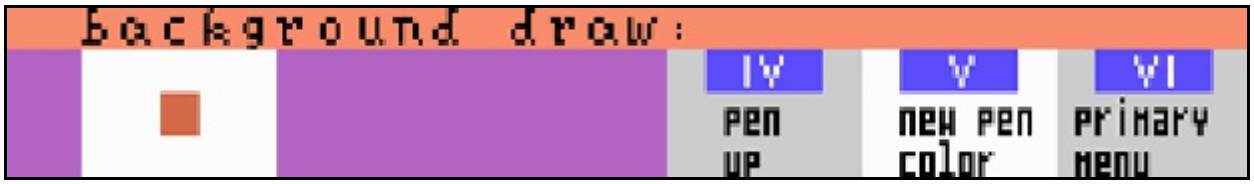
SmartKEYs "IV" and "V" simply turn "off" and "on" the cell number displayed at the bottom of the title bar. The condition that you select here will remain in effect until you change it again.

One of the uses of a good graphics screen is as an ID header on VCR tapes. That's what option "III", "BLANK PERIMETER", is designed for. Just tap the SmartKEY and the title bar, message window, and SmartKEY window are filled with the background color – the screen is ready to record using your VCR. To restore the screen, just tap any key.

(V) DRAW BACKGROUND

Pressing the Roman numeral SmartKEY "V" from the primary menu will take you to the options for detailed background shading; these options are revealed in the

picture below. The small block to the left of the SmartKEY labels reveals the current background pen color. NOTE that the LABEL for SmartKEY IV REVEALS the CURRENT PEN STATUS (UP or DOWN). Just tap the SmartKEY to change the status.



Each byte of the video chip's bit image represents eight pixels on the hi-res screen. These eight pixels can have two colors: one foreground and one background. Some of Coleco's graphics progress appear to overcome ADAM's color bleeding bug by drawing in both the foreground and the background. Now you can also do this.

The cursor for the background drawing looks very similar to an underscore, *ie*, it is a straight line similar to the underline symbol. Moving horizontally the BKG cursor moves eight pixels at a time. Vertically, however, it moves one line at a time permitting you to do some fairly detailed background work.

When the pen is UP, you can move the cursor (using the arrow keys or CONTROL + an arrow key) without disturbing the graphics screen. When the pen is DOWN, each move sets the background color for that byte of the GCD. You can change the current background pen color by tapping the fifth SmartKEY, "NEW PEN COLOR". As usual, you'll be presented with the color change menu (select by pointing to the desired color).

Since vertical cursor movement in the background drawing mode can be a little slow, two quick relocation options are provided. CONTROL + T (^T) will move the cursor to the top of the current column. CONTROL + B (^B) will move it to the bottom of the column.

Pressing <ESCAPE> or SmartKEY "VI" will return you to the primary menu leaving any background color changes in effect. You may also press UNDO to restore the screen to its previous condition.

(VI) DRAW FOREGROUND

Pressing Roman numeral SmartKEY "VI" from the primary menu will take you to the options for detailed foreground drawing. These options are revealed in the following illustration.

The small block to the left of the SmartKEY labels reveals the current foreground pen color. NOTE that the LABEL for SmartKEY "III" reveals the current pen status (up or down) and that the LABEL for SmartKEY "IV" reveals the CURRENT pen MODE. (Draw or erase). To change either option, just tap the SmartKEY.

Drawing is the feature for very detailed foreground artwork – remember, though, that every eight pixels may have only one foreground color.

The cursor for foreground drawing is an arrow pointing to the upper left. When the pen is UP, you can move this "stylus" (using the arrow keys or CONTROL + an arrow key) without disturbing the graphics screen. When the pen is DOWN, each move changes the foreground. In the DRAW mode, pixels will be turned on (in the selected color). In the ERASE mode, pixels will be turned off (erased). You can change the current foreground pen color with SmartKEY V, "NEW PEN COLOR".

The current screen position is revealed in the message window; the format is: horizontal, vertical. The horizontal range is "0" through "239". The vertical range is "0" through "159". Five quick stylus relocation features are implemented. These are used in conjunction with the CONTROL (designated by the "^" symbol) key.

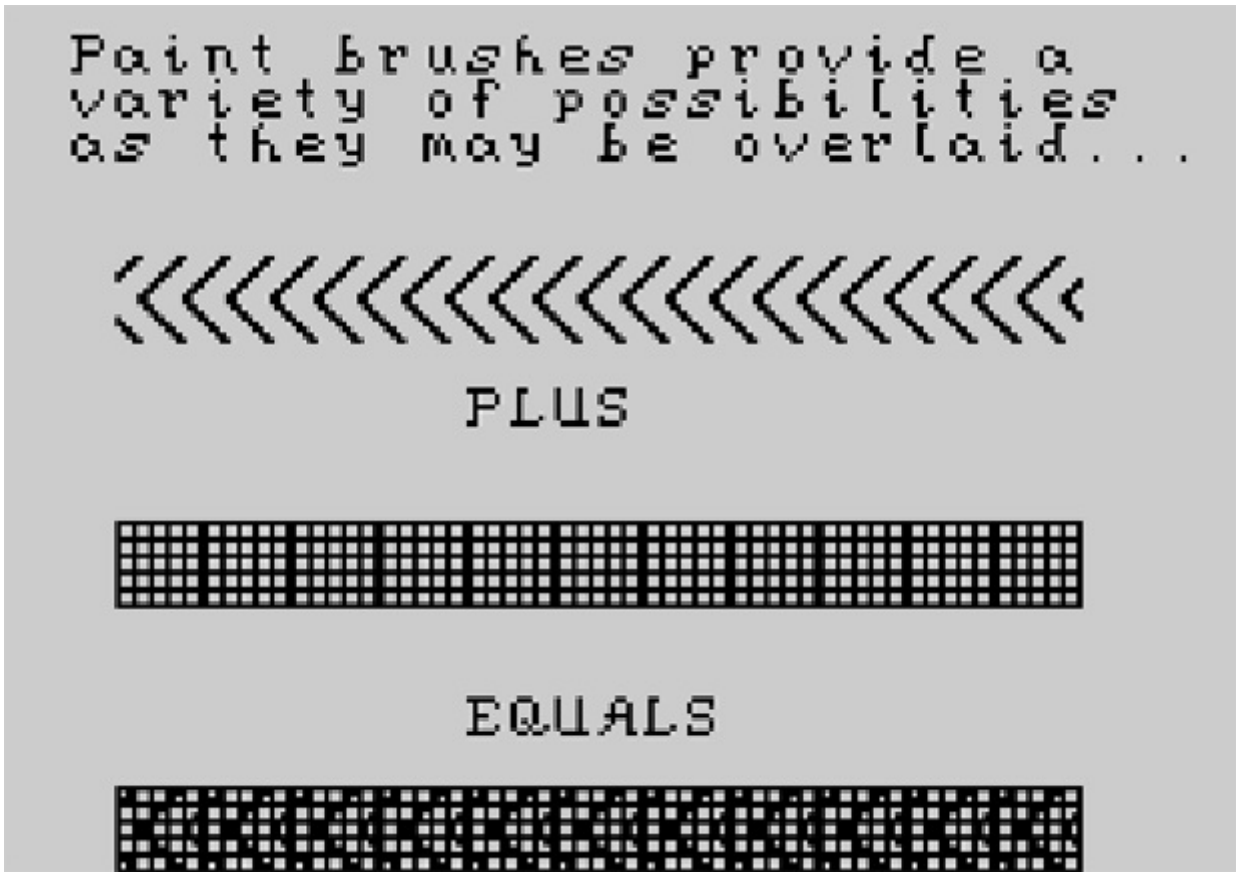
These are:

^A = upper left corner
^B = upper right corner
^C = lower left corner
^D = lower right corner
^E = center of graphics screen

You can change the current pixel increment (stylus movement distance) with SmartKEY "II". You can return to the primary menu making permanent any foreground drawing by pressing <ESCAPE> or SmartKEY "VI". You may also press UNDO to restore the previous screen.

(IV) PAINT GRAPHICS

Painting is a unique aspect to the PowerPAINT program distinguished from a foreground and background drawing, clip art, and sprite art. The prime difference with paint brushes is the "overlay" capability. Painting permits you to fill large areas quickly with a particular pattern. The following illustration depicts some simple paint examples.



Pressing SmartKEY “IV” from the main menu will present the following “PAINT GRAPHICS” menu.

SmartKEYs “I” and “II” reflect the current brush mode (draw or erase) and status (up or down). Option “III” permits you to select your brush preference. The screen will clear revealing the current brush shape at the center of the screen. You may use the UP and DOWN arrow keys to scan through the set of brushes; press <RETURN> to select the displayed brush. Press <ESCAPE> to abort the selection.

SmartKEY “IV” lets you select the pixel increment (1 thru 128). SmartKEY “V” lets you change the brush to the color of your choice – the standard color selection menu is used.

PowerPAINT gives you great latitude with this paint option; to permit close border drawing you may overwrite the title bar and SmartKEY labels. This is the only way to get in close to the edges with some brushes – there is an infinite variety. The title bar and SmartKEYs will be restored when you return to the primary menu.

The paint brush will only wraparound on the left side of the screen (at the title bar). When the brush is UP, it can be moved without disturbing the graphics screen. When it is DOWN, any movement will change the screen’s foreground, either ERASEing or DRAWing.

PowerPAINT comes with two sets of paint brushes – 7 brushes per set (one set is already in RAM when the program is booted). Our brushes were designed on a 16 by 16 grid using Guy Cousineau’s public domain “SHAPE MAKER” program.

You can even create your own paint brush sets for use with PowerPAINT. Any standard SmartBASIC shape table BSAVEd with a length of “1000" bytes may be used by the program. As you can see, this one aspect leaves the program open for a large variety of custom creations ranging from CAD layouts to highly specialized overlay brushes.

Each time you enter the PAINT GRAPHICS menu from the primary menu, the paint brush is at the upper left corner of the screen. You may return to the primary menu leaving your designs in place by pressing <ESCAPE> or SmartKEY "VI". Pressing the UNDO key allows you to restore the previous screen.

STORE/GET

FILE VERSATILITY

One of the more interesting aspects of PowerPAINT is the fact that it can load a variety of different file formats and distinguish them properly. The program can load ELEVEN different types of files. These are discussed by filetype.

"A" filetypes:

PowerPAINT can load and display and standard RLE (Run Length Encoded) picture file. These are commonly transfered via modem. Many digitized photgraphs are also stored in RLE format. There is a minor shortcoming with our depiction, however. The very bottom and extreme left side are cut off. The translation display, on the other hand, is remarkably fast.

PowerPAINT can load SmartLOGO picture files. With these you are given the option to overlap the graphics into the nxt vertical cell number (provided you are not loading to the last odd or even numbered cell). Generally speaking, though, SmartLOGO files don't make good hardcopies because of the odd background drawing configuration. Most of these files will require touching up; also the unused LOGO background is transparent with respect to the current border color.

"^B" filetypes:

SmartBASIC reveals CONTROL-B filetypes (z80 binary files) as a frowning face. The PowerPAINT program changes the filetype to a normal "B". The program can load three types of z80 binary files: 10K picture files previously stored with PowerPAINT (40K or 80K, with any size memory expansion board), and CLIPPER clip art files. NOTE that the program will only load CLIPPER files stored in z80 binary format.

“H” filetypes:

This is where the real variety comes into play. PowerPAINT will load SmartPAINT (an earlier DIGITAL EXPRESS graphics program) picture files – THERE ARE CURRENTLY OVER 200 PUBLIC DOMAIN FILES ALREADY IN SmartPAINT format!! The program will load any SpritePOWER compatible sprite set (“H” filetype). It will load any “FontPOWER” compatible font set – that DIGITAL EXPRESS program comes with eight font sets and the number of sets in the public domain is also growing rapidly. PowerPAINT will also load picture files stored in GRAPHIXPAINTER (by Wayne Motel of NIAD) format – with this file you also have the option of overlapping the graphics to the next vertical cell number. It will load PAINTMASTER (by Strategic Software) picture files. And, it will load and SmartBASIC shape table (“H” filetype) – binary; not turbosaved) that is BSAVEd at a length of 1000 bytes – to be used as a set of paint brushes.

DIRECTORY OPTIONS

Pressing the STORE/GET word processing key from the primary menu will present you with a variety of file access choices. Unlike most of the other options from the primary menu, this one has several menus of sub-options. The first of these sub-menus presents three options. These are depicted below.

SmartKEY “VI” will take you back to the primary menu. SmartKEY “V” will read the medium (disk or data pack) in the specified drive; be CERTAIN that you have a storage medium in the specified drive BEFORE pressing the SmartKEY. At first this specified drive will be the one PowerPAINT was booted from. You can change the current drive with SmartKEY IV, “SELECT NEW DRIVE”.

When you press SmartKEY “IV”, ADAM will scan each storage drive to ascertain whether or not it contains a medium. Thus, you should insert any alternate media in the drives BEFORE pressing SmartKEY IV, “SELECT NEW DRIVE”. If you have a storage medium in all four drives, you’ll see the information in the

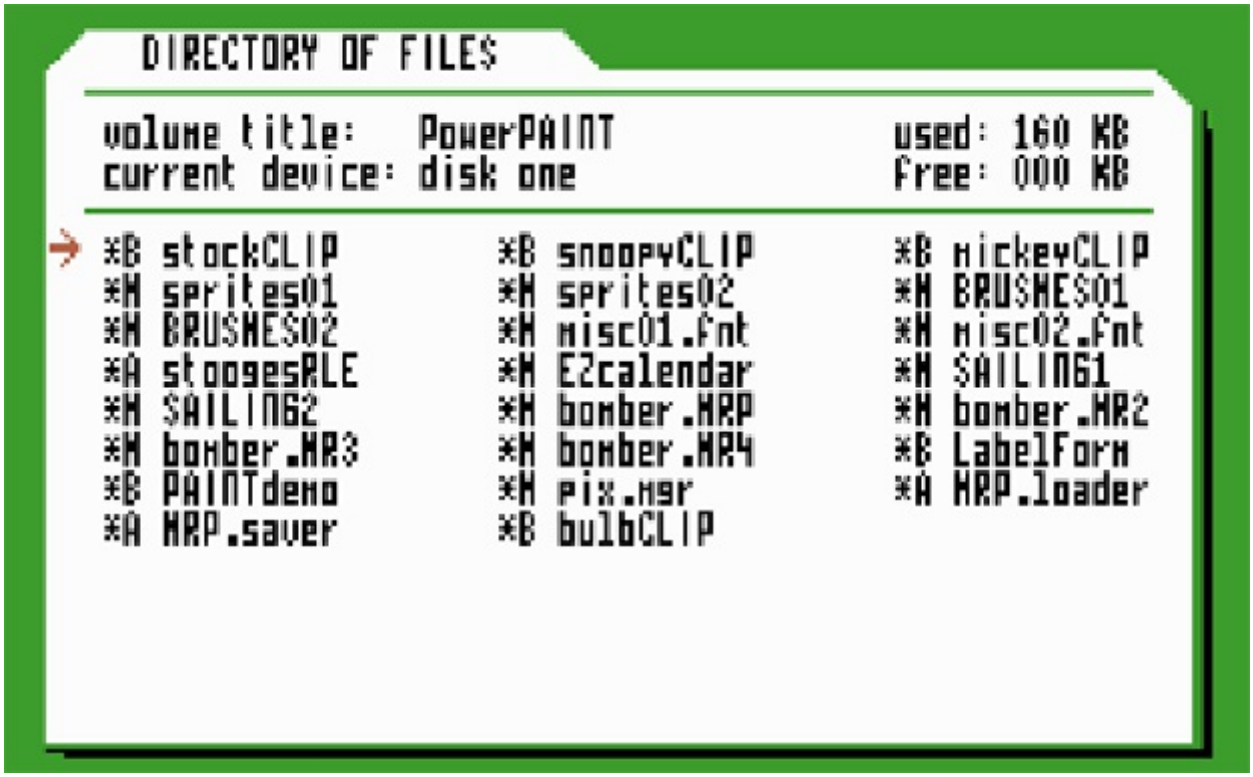
first illustration below in the SmartKEY window. Only drives which contained media when you chose "SELECT NEW DRIVE" will be displayed. For instance, if only the first tape and disk drive contained a storage medium, you'd only see the information depicted in the second picture below.

You'll note that SmartKEY V is labeled "ramdisk". This is a fast access simulated storage drive. With only a 64K expander there is no room to store files on the ramdisk – this is because the program uses 62K of extra memory regardless of card size. With larger memory expanders, files may be stored on the ramdisk – when you turn ADAM off or boot another medium, the ramdisk files will BE LOST. Thus, you should load them into memory and store them on a physical drive first!

To select a new drive, just tap the SmartKEY which corresponds to the drive that you want to access. When you do, PowerPAINT will take you back to the first menu of three directory options; then simply depress SmartKEY V, "READ MEDIUM".

CONTINUED DIRECTORY OPTIONS

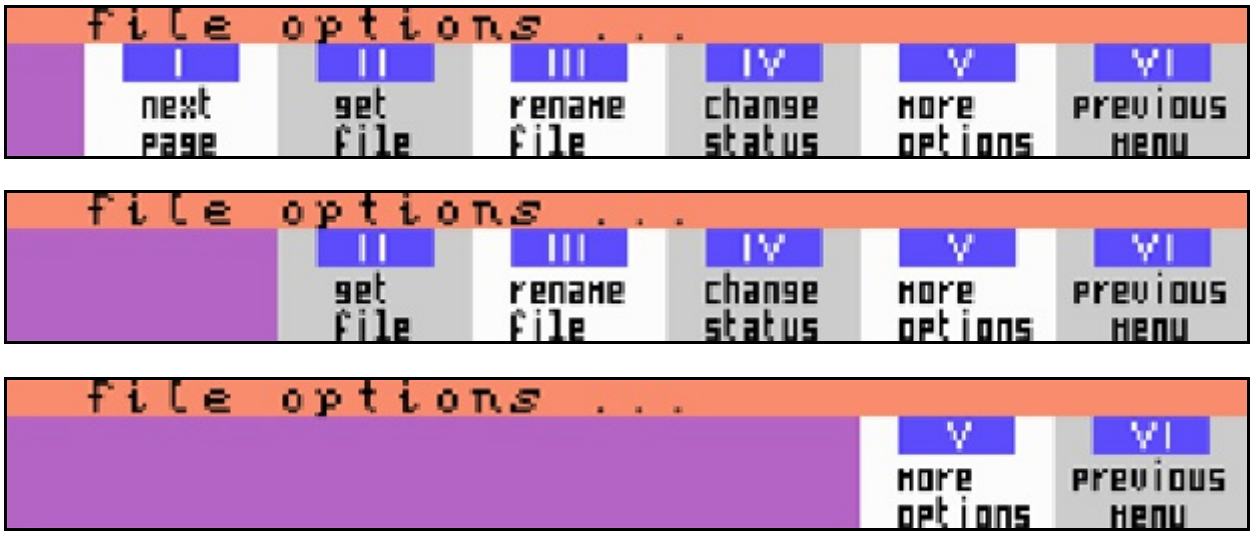
When you press the STORE/GET key from the primary menu, a blank, white file folder will be displayed inside the graphics window. When ADAM has finished reading the medium, the file names contained in the medium's directory will be written onto the file folder. The picture at the top of the next page shows what you'll see revealed within the file folder for the PowerPAINT medium.



In the top part of the folder, the current device is shown (disk one in the picture above). And, the volume's title is also shown. To the right of this data, you'll see how many blocks of the storage medium are USED (for file storage) and how many blocks are FREE (available for file storage). Below this, on the file folder, all of the filenames are shown (in three columns). Just to the left of each filename, You'll see the file's type displayed (as with SmartBASIC). This will most likely be an "A" (for an ASCII file: BASIC program, SmartWRITER document, a BASIC text file, etc.), an "H" (gor a binary image BASIC file, a SmartWriter document, a binary converted BASIC program, etc.), or a "B" (for a z80 program – z80 programs actually have an "ASCII 2" file type). Just to the left of the file type, an asterisk will be displayed if the file is LOCKed.

You'll see a red arrow pointing to the right. You can position this arrow using any of the four cursor arrow keys to select a file by pointing to it. A full wraparound feature is employed for moving this pointer arrow – this permits faster pointer movement. Also, pressing the HOME key will return the pointer to the upper left starting position. If the medium doesn't contain and standard files, a message stating so will be displayed instead of any filenames.

Depending on certain conditions you'll see one of three possible sets of SmartKEY options beneath the file folder when you select "READ MEDIUM". If the medium that ADAM just read had a two (or more) block directory with the filenames in the extra directory blocks, you'll be presented with the set of options depicted in the first picture below. If you accessed a standard one block directory (with files stored on the medium), you'll see the set of options depicted in the second picture below. If the medium was blank (did not contain any standard files), you'll be given the set of two options depicted in the third picture below.



The "NEXT PAGE" option will read the next directory block (for two or three block directories). This option works in a round-robin fashion, *ie*, it cycles through the directory blocks starting over again when the last filename in the directory is read.

The "GET FILE" option will retrieve the file (if the file is not in one of the ELEVEN formats compatible with the program, you'll be advised that it is inaccessible) to which the arrow is pointing. When the file has been retrieved, PowerPAINT will branch back to the primary menu.

The "RENAME FILE" option allows you to change the name of any file stored on the current medium. You do NOT need to enter the new file type when renaming a file; the program will give the new filename the same file type as the previous filename. As is the case with all of the file access options, be certain that the arrow is pointing to the filename that you want to access BEFORE you select the SmartKEY function.

With the “RENAME FILE” option, the filename will be highlighted on the file folder after you press the Roman numeral function key. Just type in the new filename and press the <RETURN> key to have ADAM change the name. You can press <BACKSPACE> or the left arrow key to erase typed letters in the new filename. If you press <ESCAPE> while entering the new name, the program will go back to the PREVIOUS menu rather than to the primary menu of directory options.

Pressing SmartKEY IV, “CHANGE STATUS” presents another set of file access choices. These are revealed in the illustration below.

When you press a SmartKEY from this menu, the specified action will be performed on the filename which is highlighted on the file folder. DELETEing a file erases it from the directory; use this option with EXTREME CAUTION! LOCKing a file protects it from deletion. When a file is first stored, its status is “UNLOCKed”. All the files that come on the PowerPAINT medium are LOCKed (protected from DELETE) and incapable of being UNLOCKed – this is a precautionary measure.

A few final notes about GETting files from the PowerPAINT file folder. If you plan to GET a picture file, BE CERTAIN that the cell (and cell number) was displayed from the primary menu THAT YOU WANT TO REPLACE (load the picture to)! With the picture load “overlap” option (for SmartLOGO and GRAPHIXPAINTER files) the current cell will be replaced, then the top 32 pixel length of the vertically consecutive cell will be replaced – you may choose to not “overlap”. Paint brush files, clip art files, FontPOWER font sets, and sprite files will automatically replace the previous set used by the program – font sets will replace the “user fonts”. The “default” (in place when PowerPAINT is first booted) file for each of these graphic subsets is also stored on the PowerPAINT medium. Thus, you may load an alternative file and later restore the “default” file.

A picture stored in SmartPAINT format (by DIGITAL EXPRESS) is divided into four files with suffixes “.HRP”, “.HR2", “.HR3", and “.HR4". A picture stored in GRAPHIXPAINTER format (by NIAD) is divided into two files with suffixes “.H2x” and “.H2p”. A picture stored in PaintMASTER format (by Strategic Software)

is divided into two files with suffixes “1" and “2". These component files are implemented by the designers for RAM conservation with regard to SmartBASIC usage. It DOES NOT MATTER which of these component files you point to for GETting a picture. PowerPAINT will correctly discern the picture file format.

MORE DIRECTORY OPTIONS

The “MORE OPTIONS” selection gives you three additional directory controls. The illustration below shows these.

Use the “INIT DIRECTORY” option with EXTREME CAUTION; this will clear all the files stored on a medium! Note that the PowerPAINT medium is protected from INITializing. When you select this option, you’ll be prompted to enter the new volume name and the block size for the directory, *ie*, one (standard), two or three blocks.

If you are INITing a disk, you’ll then be given the following volume size selections. After tapping the smartKEY of your choice, PowerPAINT will then verify that the disk is formatted for that volume size. If so, it will then be INITed. If not, you’ll be returned to this volume size menu. Of course, the program could just check the volume size without user interventions; this option just allows you to select the size for backup compatibility.

You will note that a portion of the ramdisk is reserved as a workspace for the program – 63K for a standard memory expander and 103K for any larger memory card. This fact notwithstanding, you MAY INIT THE RAMDISK. After resetting the directory, the program will restore its workspace on the ramdisk – in other words, INITing the ramdisk will clear your files stored there and leave the workspace unscathed.

The “RENAME VOLUME” option permits you to change a volume’s name without clearing the files from the directory. You’ll be prompted to enter the new name. When you press the <RETURN> key, PowerPAINT will rename the current volume.

When you tap SmartKEY V, “STORE FILE”, you’ll be given three options for saving the current screen or the entire workspace (4 screens with a 64K card; 8 screens with a larger memory card); these are depicted in the illustration below. PowerPAINT can also retrieve files stored in any of these three formats.

The “SmartPAINT FORMAT” option simply stores the current cell in that format. The “BINARY 10K FILE” option stores the current cell as a 10K file.

The action of the “ENTIRE WORKSPACE” option will depend on the size of your memory card. For a standard 64K card, this will create a 40K file of the four viewable screens – the workspace picture. For an Orphanware compatible memory card of any larger size, this will create an 80K file of eight viewable screens (again, the workspace picture).

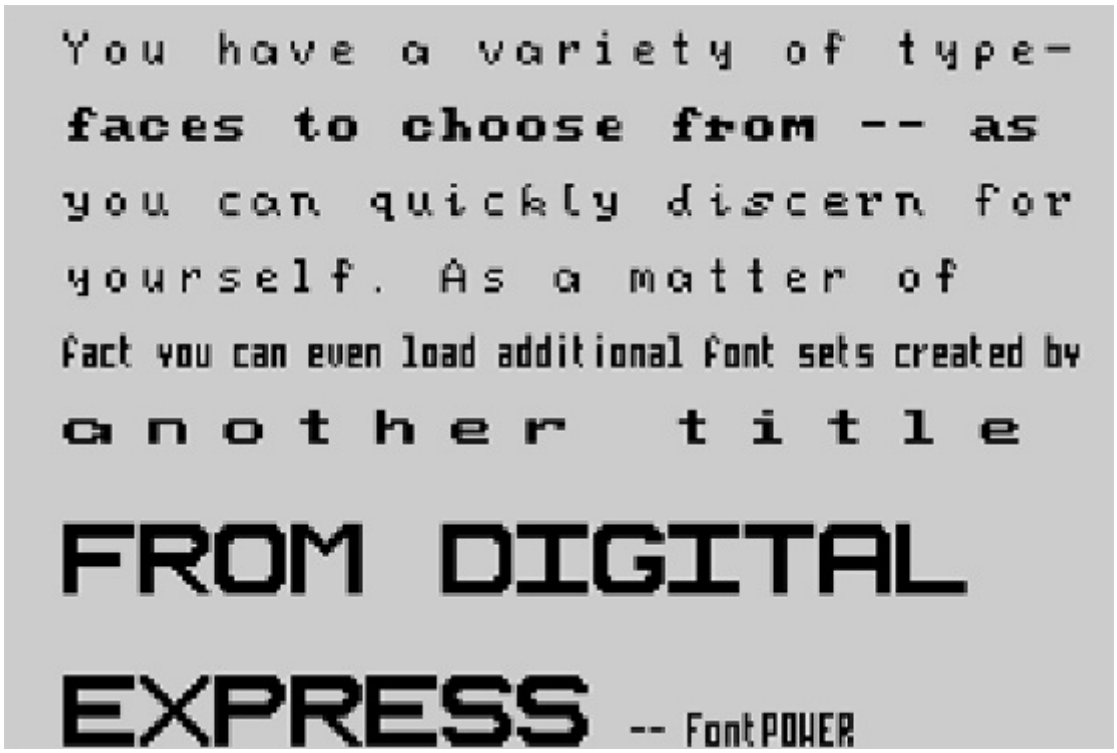
Now what if you have a 64K expander when you first purchase PowerPAINT (creating 40K picture files) and you later get a larger memory card (retrieving 80K picture files)? Or, what if you want to let an associate use your 80K pictures on his system with a smaller memory card? No problem; PowerPAINT takes care of the potential incompatibility for you.

If you have the 80K capability and attempt to retrieve a 40K workspace, you’ll be asked if you want to load the smaller picture to the upper half of your larger picture workspace (cells 1 thru 4). If you answer “NO”, it will be loaded to the lower portion of the workspace (cells 5 thru 8).

If you only have a 64K card installed and attempt to retrieve an 80K picture, you’ll be asked if you want to load the upper half of the large picture. If you answer “NO”, the lower half of the large picture willto your smaller workspace.

INSERT (ENTER TEXT)

Pressing the "INSERT" word processing key from the primary menu will allow you to enter text into your designs. The following illustration depicts the included font sets. Of course, additional FontPOWER compatible font sets may also be loaded giving you a large variety of possible typefaces.



The first text entry menu consists of four options. These are depicted in the illustration below.

With the "NEW TITLE" option you just replace the current title. This option is just for your information while working on a picture. The current title is NOT stored with a PowerPAINT file – only the bit image and color data is stored. With the SmartPAINT storage option, however, the title will be preserved.

Throughout the various text entry options an open box is used for the cursor. The pixel dimensions of the box are the same as the matrix dimensions of the particular typeface's size. The cursor for normal FottPOWER fonts is 8 pixels by 8 pixels, the cursor for double sized text is 16 pixels by 16 pixels, and so on.

The "NORMAL TEXT" option gives you access to the FontPOWER compatible font sets – four are included on the medium: system (those read from the SmartWriter ROM chip), bold, script, and a set of rabbit graphic fonts. Selecting "NORMAL TEXT" presents the following menu options.

To the left of the SmartKEY labels, you'll see the text "ABCabc" printed. This reveals the current typeface, foreground color, and background color. These will remain the same until you change them with the appropriate SmartKEY options. When using special symbol font sets the "ABCabc" will, of course, appear as the corresponding symbol designs.

You enter text simply by typing on the keyboard. The cursor, as with all the other graphics modes, points to the location of where the next character will be printed. You can relocate the cursor with the arrow keys. You can erase with the <SPACE BAR>. Regardless of what else you do within the program, the cursor location will always be where you last left it. Using the <SPACE BAR> is a quick way to erase small portions of graphics.

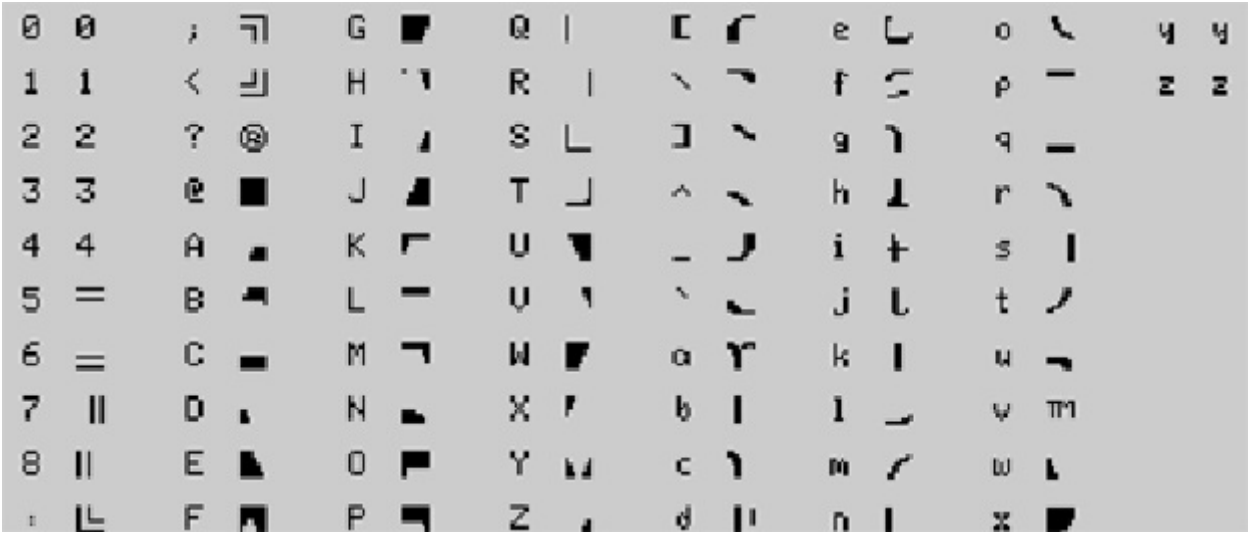
The "CHANGE FONTS" option gives you a menu with four typeface selections. These are revealed in the picture below. Upon tapping one of these SmartKEYS, you are returned to the "text entry" menu with the change indicated by the alphabetic string, "ABCabc", in the SmartKEY window. User fonts is reserved for FontPOWER font sets that you load with the program. The "REVERSE FONTS" option changes the foreground and background of the current set; the hardcopy of this text will be white on black.

The “BACKGROUND COLOR” and “FOREGROUND COLOR” options allow you to set the obvious controls using the standard color selection menu. Changes will remain in effect until you alter them. The next typed character will reflect the changes.

The following illustration shows the three internal font sets that come with PowerPAINT.

The PowerPAINT medium comes with two FontPOWER files; both are special symbols. The one that is in RAM when the program is booted is a collection of what is sometimes referred to as “rabbit graphics”. The chart below shows the correspondences between these various shapes and the keypresses that produce them. The concept is that you can connect the pieces together to form a variety of larger shapes. The illustration at the top of the next page shows the keypresses that will generate “ADAM” in giant letters using the fonts.

default user fonts...



You may return to the primary menu leaving the entered text in place by pressing <ESCAPE> or SmartKEY "VI". You may press UNDO to restore the screen to its previous condition.

The "SPECIAL TEXT" option presents the following menu of four font sizes to choose from.

Each of these font sizes uses the same menu – shown below. With the special text, the cursor always starts at the upper left corner of the screen. The cursor may be relocated with the arrow keys.

The special text is used much in the same manner as paint brushes. They may overlay exisitng graphics or replace existing graphics; SmartKEY “III” refelcts the CURRENT character status. You may rotate the fonts in 90 degree increments. A “U” for up, “R” for right, “D” for down, or “L” for left is shown in the message window reflecting the current rotation. It is recommended that you only work with the rotated text after gaining some experience with the program.

MOVE/COPY

Pressing the “MOVE/COPY” word processing key from the primary menu presents the following set of options.

Selecting “PULL PICTURE” presents further options. These are depicted in he following illustration.

Tapping SmartKEY IV “PULL SCREEN”, allows you to shift the screen up, down, left or right using the arrow keys. This feature is included so that you may align your graphics as you deem fit. Pressing <ESCAPE> will return you to the primary menu leaving the changes in effect. Tapping the UNDO key will restore the screen to its previous condition.

The “PULL BY ROW” option permits you to pull horizontal rows to the left or right. The following menu is presented.

A small hollow white box appears at the left margin of the screen. Position this on the row that you want to pull. Then press SmartKEY V, "CONTINUE PROCEDURE". Now, just use the left and right arrow keys to align the row as you want it. If you'd like to align another row, just tap SmartKEY "V" again. The process will repeat itself. Pressing <ESCAPE> or SmartKEY "VI" will return you to the primary menu leaving the graphics change in effect. Tapping the UNDO key will return the screen to its previous condition.

SmartKEY III, "COPY CELL", from the initial MOVE/COPY menu allows you to copy the current screen to another cell of the overall picture. You'll be asked to enter the cell number that you want to copy the screen to. It will then be shown and you are asked if you really want to replace it (there is no other UNDO option). You may then continue duplicating the entire screen until you exit with the <ESCAPE> key.

The next two MOVE/COPY features, "MOVING WINDOW" and "SET FRAME" are rather restricted due to limited workspace. Even though PowerPAINT uses more RAM at any one moment than any other program for the ADAM computer (between 140K and 184K), there wasn't enough RAM space (without REQUIRING larger than 64K expander) to handle these two options as smoothly as is possible with a greater workspace size.

Tapping SmartKEY IV, "MOVING WINDOW", from the MOVE/COPY initial menu presents these options. It is IMPORTANT that you set the current cell number to the point from which you want to begin scrolling FROM THE PRIMARY MENU – FIRST. If it is not possible to scroll in a particular direction an error buzz will sound. Use the indicated arrow key to scroll the picture on the graphics screen. When you get to the end of that side of the picture, you may then scroll back in the opposite direction. Press <ESCAPE> to abort the moving window mode.

The "SET FRAME" option leads to the move, copy, and erase screen segments menu. You are first asked to position the upper left corner bracket (always starts at the upper left corner of the screen). The arrow keys are then used to move the

indicator; pressing <RETURN> locks it in place. Then you are prompted to position the lower right corner bracket. Now, the following options are presented.

With the "ERASE" option, the foreground of the designated segment will be cleared. And, the background color will be set to black. You are then asked if the results are okay. Answering "NO" will restore the previous condition of the screen – there is no other UNDO option provided. NOTE THAT the maximum dimensions of the frame is 64 pixels by 64 pixels.

The "MOVE" and "COPY" options are very similar in operation. The only difference is that after MOVE copies the frame contents, it erases the frame contents at the original screen location. For this reason, you may find COPY to be the more useful option.

The message window lists five control commands: ^U, ^D, arrows, RET, or ESC. The CONTROL+U and CONTROL+D options change the cell number allowing you to copy segments from one screen to another – "U" for UP, increase cell number; and "D" for DOWN, decrease cell number. The arrow keys animate the orginal frame contents on the screen. When you have it at the desired location and cell, just press <RETURN>. You'll then be asked if the results are okay. If not, the screen will be returned to its original condition.

PRINT

The ability to print graphics is one of the primary reasons for using a computer graphic design program. We recognize this fact fully as you'll discover with the WIDE variety of print options that PowerPAINT gives you. There are literally scores of possible hardcopy combinations. Pressing the PRINT word processing key from the primary menu presents these basic categories of hardcopy options as seen at the top of the next page.

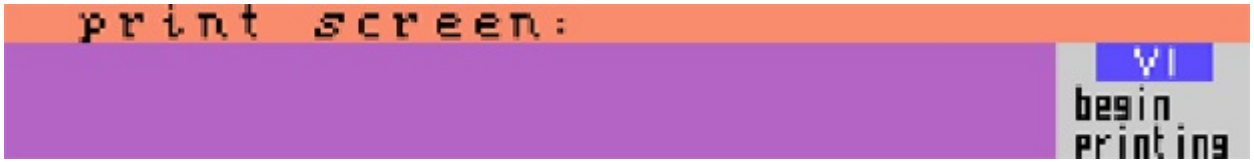
SmartKEY I, “RESET PRINTER”, will simply reset your printer; this is tantamount to turning it off and back on again. It is recommended that you employ this function at the beginning and end of each printing session.

The “PRINT SCREEN” option prints out the currently displayed picture cell. This is the most versatile of the print options. You are first presented with the following menu.

The “QUICK DRAFT” option is provided for simple quick hardcopy tests. It offers no additional print variations.

The “MORE OPTIONS” selection will then ask for a “MIRROR IMAGE” or “STANDARD IMAGE” selection. Next, it will ask you to choose between “REVERSE FOREGROUND” and “NORMAL FOREGROUND”. Then, you select “LIGHT HARDCOPY” or “DARK HARDCOPY”. The ‘light hardcopy’ selection will then ask for the left margin (in inches). Then, you are asked to press SmartKEY VI “BEGIN PRINTING”.

Pressing <ESCAPE> during the printing process (depending on your printer’s internal buffer size) will halt the printing and return you to the initial PRINT menu.



With the “DARK HARDCOPY” option, you are asked to enter the print width of the cell’s picture (1 to 8 inches). Then you enter the left margin value. Next, you are asked to select a length factor from the following menu as seen at the top of the next page.

These selections of width and lengths allow you to get a variety of hardcopies from one single cell's picture. The screen to standard size hardcopy proportional correspondence is 4 inches by 2.25 inches. Thus, a triple length printout is 6.75 inches long. Selecting a width of 8 inches and the double length option will print a hardcopy that is exactly twice the size, proportionally, as the screen's picture – 8 inches by 4.5 inches.

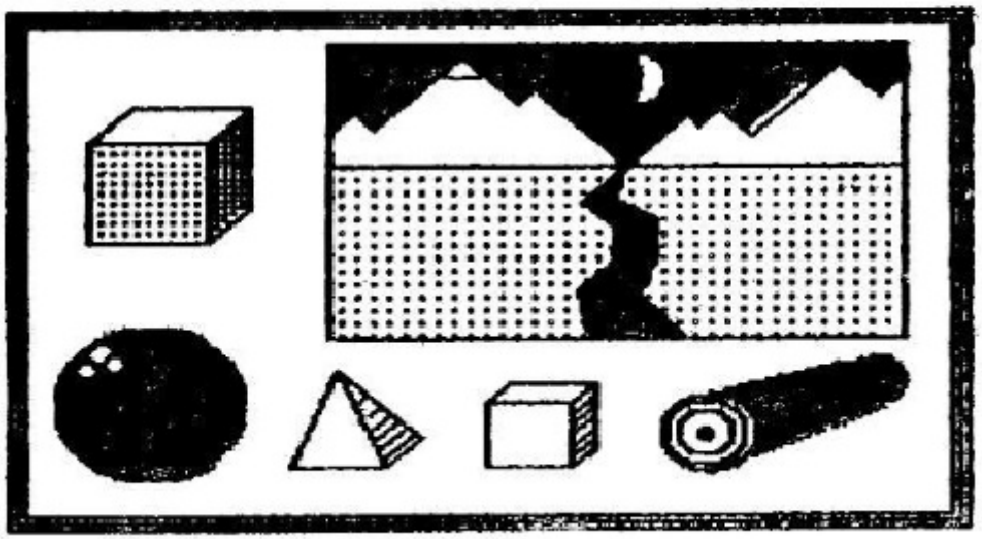
The "PRINT LABELS" selection asks you to enter the number of labels to print. Then you choose between light and dark hardcopies. This LABEL option prints from the top edge of the screen to 96 pixels down. A temporary horizontal white line of demarcation is drawn for your visual perspective. Also, for your convenience, a sample label form file is included on the PowerPAINT medium. The label MUST BE 1 and 7/16 inches in length and 4 or 5 inches in width. You should use single column pin-feed labels.

The "PRINT HEADER" option will print the first two horizontal cells (one and two) only. This option is supplied for the facility of printing customized letterheads. You could also use this option in conjunction with a workspace picture file and the workspace print option to print an entire 11" hardcopy page.

The "PRINT WORKSPACE" option will print the entire workspace – the large picture (4 screens with a 64K expander, 8 screens with a larger memory board). Please refer to the "cell sequence" chart on page 8 before printing a workspace picture.

The next few pages contain a small number of examples of what you can do with PowerPAINT. All but the cartoon character's face on the next page (which demonstrated print variations) were designed with PowerPAINT. The calendar was created with the included public domain file 'Ezcalendar'. The stationary was created using the entire workspace picture. The letterheads were printed with the header print option. The custom stationary and letterheads have been photo-reduced to fit the page size of this manual.

December 1988						
SUN	MON	TUE	WED	THR	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31



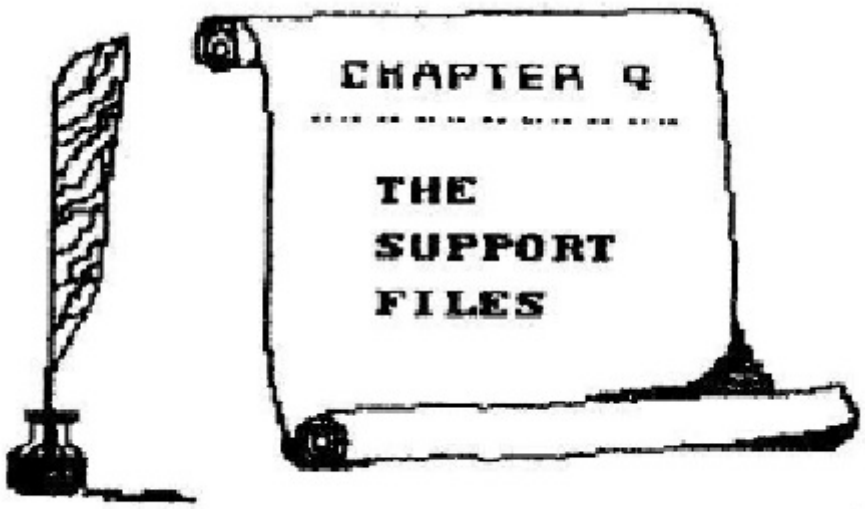
from the desk of:
SOLOMON SWIFT

P.O. Box 37
Oak Hill, NV
25981

from the desk of:
SOLOMON SWIFT

P.O. Box 37
Oak Hill, NV
25981

FROM
PAULA`S
DESK . . .



Four CLIPPER compatible clip art files are included. These are “stockCLIP” (the default file), “snoopyCLIP”, “mickeyCLIP”, and “bulbCLIP”. Several clipart pictures come with our CLIPPER program; and, the number in the public domain is also growing rapidly.

Two SpritePOWER sprite sets are included. These are “sprites01" (the default file) and “sprites02".

Two FontPOWER compatible font sets are included; both are sets of special symbols – not actual text typefaces. These are “misc01.fnt” (the default file) and “misc02.fnt”.

Two sets of paint brushes are included. These are “BRUSHES01" (the default file) and “BRUSHES01".

Five pictures are included. “StoogesRLE” is a sample RLE file which can be transmitted as ASCII data via modem. “SAILING1" and “SAILING2" were created with Strategic Software’s “PaintMASTER” program. “Bomber.HRP” (and it’s the component files) was created with DIGITAL EXPRESS’s “ShowOFF I” – it was drawn by Alan Neeley. “LabelForm” is a sample border for designing your own custom labels with PowerPAINT. “PAINTdemo” illustrates some of the various graphics capabilities of PowerPAINT.

"HRP.loader" and "HRP.saver" show you how to use pictures in your own SmartBASIC programs. Instructions are included in the REMark statements within the programs. To use these programs, just enter LOAD and the filename.

"Pix.mgr" is a simple BASIC utility program for loading and storing SmartPAINT pictures. It will also load RLE pictures. You can even use it to store YOUR own HGR pictures in SmartPAINT format – if you are already in HGR mode when you load the program it WILL NOT clear the hi-res screen. "Pix.mgr" is a binary converted BASIC program; you must enter BRUN and the filename.

"Ezcalendar" will draw a hi-res calendar of the month and year of your choice. You may then select the "EXIT" option and BRUN "pix.mgr" to store the calendar in SmartPAINT format. This BASIC program also uses SmartKEYS at the bottom of the screen just like PowerPAINT (but the BASIC program is much slower). This program, furthermore, reveals NUMEROUS programming tricks – just LIST it to have them revealed. This is another binary converted BASIC program – you must enter BRUN and the filename.