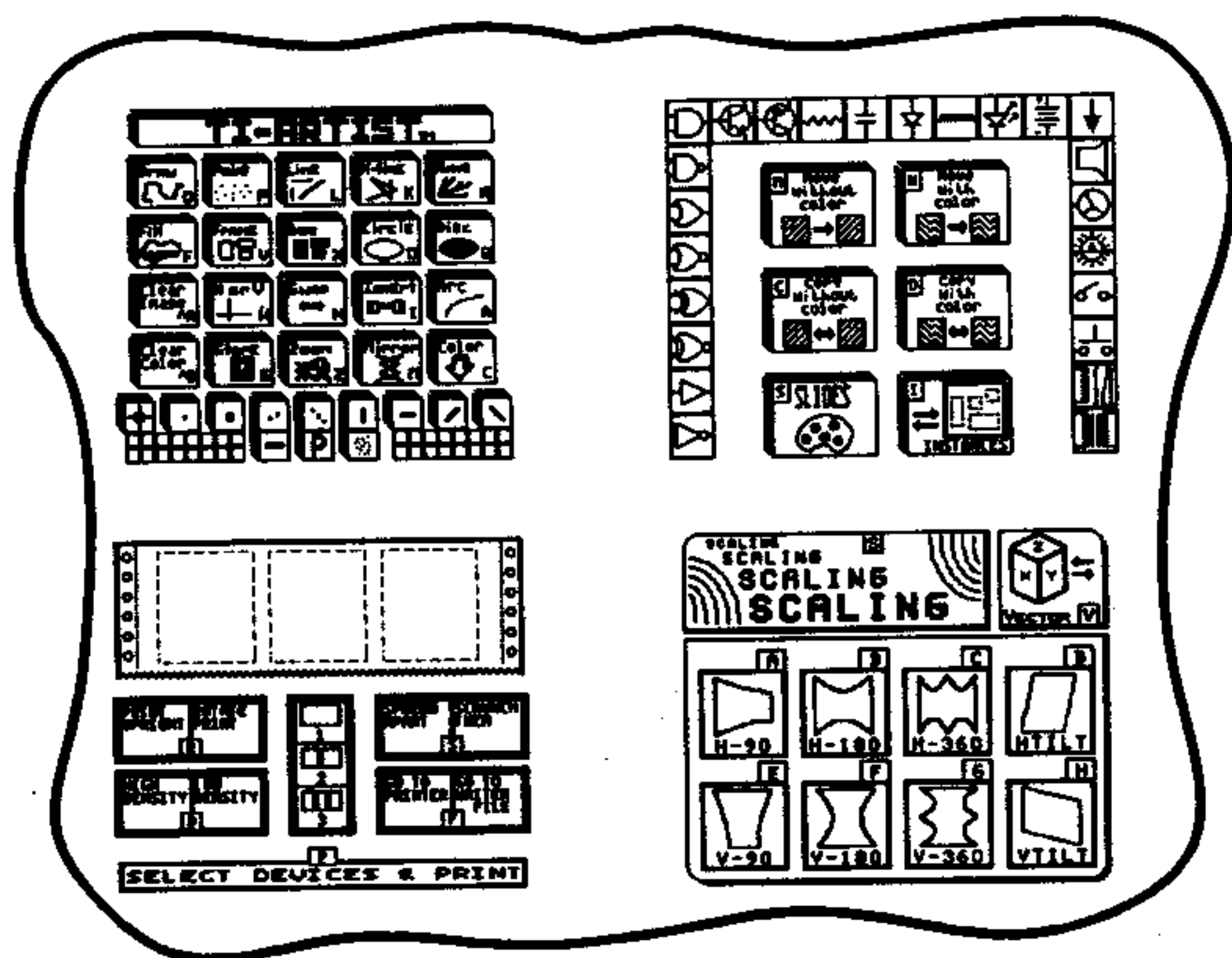


# TI-ARTIST PLUS!



— PICTURES

— INSTANCES

— SLIDES

— FONTS

— VECTORS

— MOVIES

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This readme file provides supplementary information for the TI-ARTIST PLUS! software. There were some changes in the program, which occurred after the documentation was sent to the printer, which are detailed in this file. Basically, more capability was placed in the printer section which modified the content of the printer profile files. The profile descriptions in this file supersede the profile descriptions in the document. Additional changes are as follows:

A "BANNER" capability was added to the printer capabilities which resulted in changes to the title screen for that module. It now indicates half-page, full-page or banner selections.

A method for changing the path for program file loading was added. You may now run program PATH5 from disk #1 and follow the instructions. This allows you to make TI-ARTIST PLUS! to load from the ARTIST1 file with the correct path of your choice.

#### Printer Profile File Description

##### Rec # Description

- |    |  |
|----|--|
| 1  | Algorithm selection -- "V" means vertical pins on the printer. "H" means horizontal pins on the printer. |
| 2  | Default device name -- may be modified when printing if desired.   |
| 3  | XPRMAX -- maximum dots per line  |
| 4  | Top Bit MSB -- "N" will make Top Bit LSB. "Y" will keep it as MSB.                                       |
| 5  | SPCSPC --width in dots of space character.   |
| 6  | TYPE -- 0=black white, 1=color printer.  |
| 7  | # of bits -- 7 or 8 depending on printer.  |
| 8  | HMAG1 -- horizontal magnification for printing a single picture.   |
| 9  | VMAG1 -- vertical magnification for printing a single picture.   |
| 10 | HMAG2 -- horizontal magnification for printing two pictures.   |
| 11 | VMAG2 -- vertical magnification for printing two pictures.   |
| 12 | HMAG3 -- horizontal magnification for printing three pictures.   |

- 13 VMAG3 -- vertical magnification for printing three pictures.
- 14 HMAG1R --horizontal magnification for printing one picture rotated.
- 15 VMAG1R -- vertical magnification for printing one picture rotated.
- 16 HMAG2R -- horizontal magnification for printing two pictures rotated.
- 17 VMAG2R -- vertical magnification for printing two pictures rotated.
- 18 HMAG3R -- horizontal magnification for printing three pictures rotated.
- 19 VMAG3R -- vertical magnification for printing three pictures rotated.
- 20 BIAS -- bias added to each byte of graphic data.
- 21 REPEAT -- 0 = no repeat, 1 = repeat.
- 22 Character to repeat
- 23 BEG -- codes for beginning of printout.
- 24 AFTER -- codes sent after printout is complete.
- NOTE: ALL ENTGx codes must include the number of bytes to print for single picture.
- 25 ENTG1 -- codes to enter graphics for 1 upright picture.
- 26 ENTG2 -- codes to enter graphics for 2 upright pictures.
- 27 ENTG3 -- codes to enter graphics for 3 upright pictures.
- 28 ENTG1R -- codes to enter graphics for 1 rotated picture.
- 29 ENTG2R -- codes to enter graphics for 2 rotated pictures.
- 30 ENTG3R -- codes to enter graphics for 3 rotated pictures.
- 31 ENTGB -- codes to enter graphics for banners.
- 32 CR -- code to return carriage.
- 33 LF -- codes sent to advance line.
- 34 EXIT -- CODES SENT BETWEEN PICTURES.
- 35 BLINE -- codes sent between two passes on high density.

NOTE: the COLxx records define the sequences for each color. If a color is to be "aliased" to another color the sequence, it will be entered as "=" xx, where xx is the number in the

COLxx. If you want a sequence to be white, just leave the record blank.

|    |                       |
|----|-----------------------|
| 36 | COL01 -- black        |
| 37 | COL02 -- medium green |
| 38 | COL03 -- light green  |
| 39 | COL04 -- dark blue    |
| 40 | COL05 -- light blue   |
| 41 | COL06 -- dark red     |
| 42 | COL07 -- cyan         |
| 43 | COL08 -- medium red   |
| 44 | COL09 -- light red    |
| 45 | COL10 -- dark yellow  |
| 46 | COL11 -- light yellow |
| 47 | COL12 -- dark green   |
| 48 | COL13 -- magenta      |
| 49 | COL14 -- gray         |

NOTE: In the color example given on page 35 of the manual, the record numbers shown as 16-29 are now records 36-49.

#### Calculating the Enter Graphics Codes

BASIC program ENTG is provided to help you in calculating the ENTG codes. The needed values will be prompted for.

NOTE: In the example on page 37 of the manual, ENTG records 6-11 are now records 25-31.

#### Banner Usage

To generate a "banner" type of hard copy output, push "V" until the yellow block is on the right-most section of the icon. Also you must pick the ROTATED ICON on the print menu. The data to be included in the banner should be vertically centered on the picture to be printed. Approximately the middle third of the picture will be included in the banner. The banner will occupy approximately three pages of printed output.

NOTE: Banner capabilities are limited to 8 bit printers.

#### INPUT DEVICE DSR

ARTMOUSE - Mouse driver for Geneve. Courtesy Mike Dodd.

MECHA - Mouse driver for TIMOUSE, MECHATRONICS. Courtesy John Clulow.  
JOYST - Standard joystick driver. Same as default EXTDSR.

The source code to these must be assembled using RC options.

Note: The manual incorrectly states that R15 must be multiplied by 2.

## ARTIST SECTION

The Save Picture option will now conserve space by only saving the color file when it differs from the default BLACK or TRANSPARENT.

## MOVIES

A few additions were made to the movies section.

### LOADPIC filename

This allows TI-ARTIST pictures to be loaded while in the movie section. This WILL erase the current picture in memory.

---

### DELETE filename

A standard file delete function. Will finally let you get rid of those unsightly old files.

## PLAY

This program, named "PLAY" is a stand-alone movie player.

It will let you, and others, to view movies that were created using the movie section of TI-ARTIST PLUS!

S)LOW - Makes the movie play slower.

F)AST - Makes the movie play faster.

I hereby announce this program, "PLAY", to be PUBLIC DOMAIN.

**This document describes the capabilities of  
TI-ARTIST PLUS!**

**LIABILITY**

INSCEBOT will not be responsible for any losses resulting from the use of the product described in this document. Actual liability will be limited to the purchase price.

**LICENSING**

This product may not be duplicated for resale or distribution without the express written approval of INSCEBOT Inc.

**WARRANTY**

INSCEBOT warrants this product to be free from defects in materials and workmanship for a period of 90 days from date of purchase. Replacement will be offered by return mail for a \$2.50 charge for postage. After 90 days there will be an additional \$5.00 replacement fee.

Upgrades to the most current version of TI-ARTIST will be available for a percentage of the purchase price.

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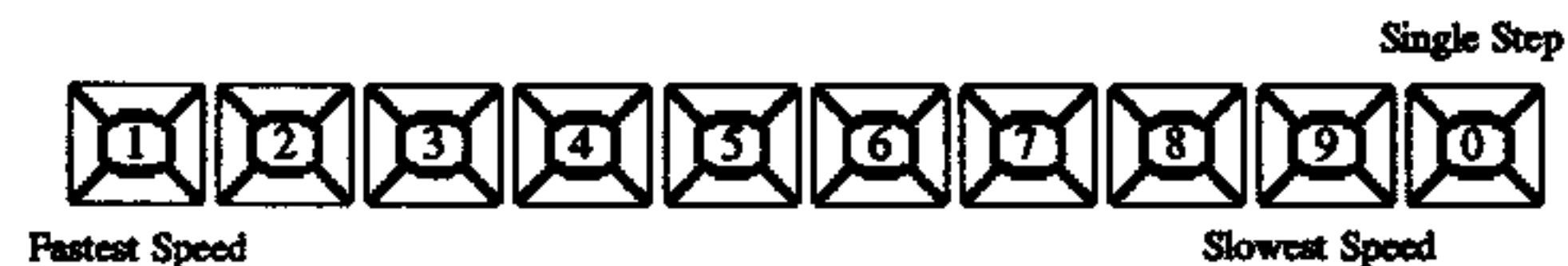
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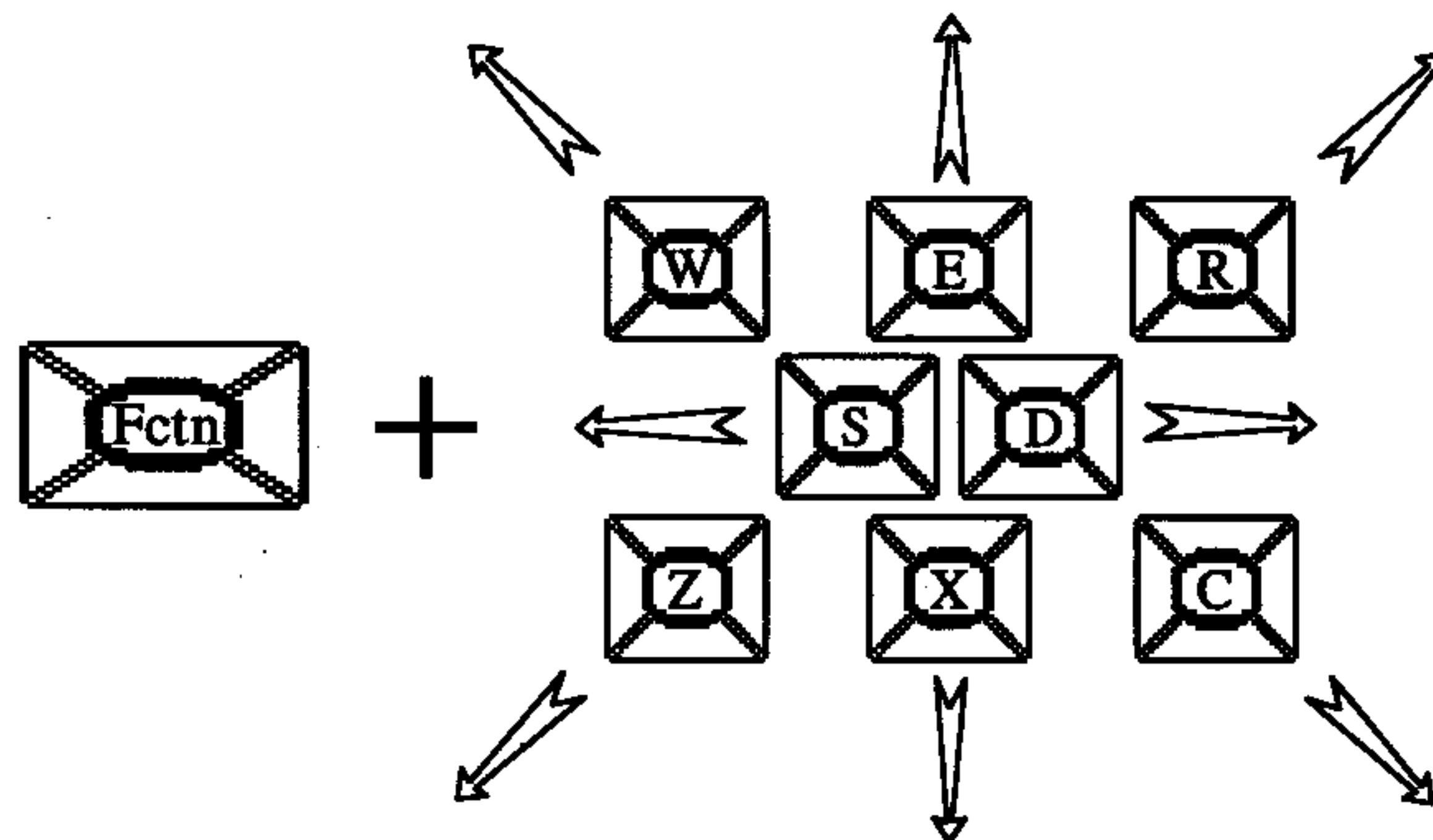


# Keyboard Control

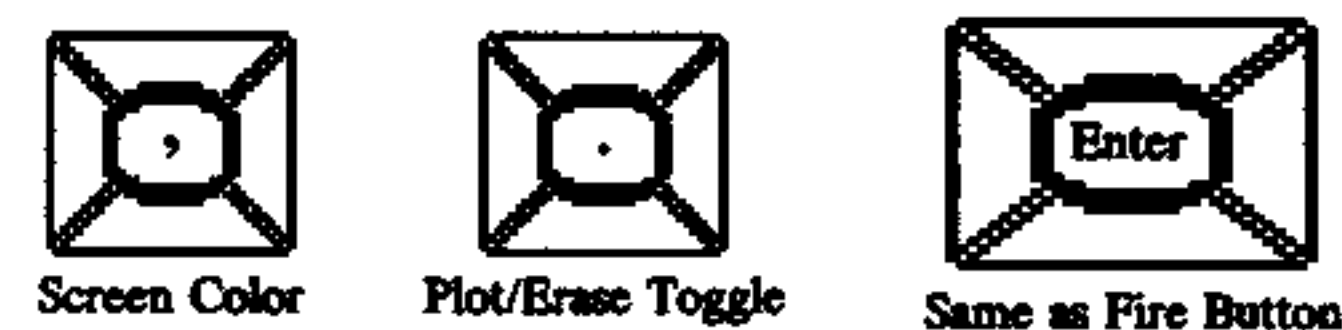
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## Arrow Keys



## Miscellaneous Keys



Space Bar Toggles Between Menu and Picture

## **GLOSSARY**

### **Character Font**

A file that defines the characters in the font section.

### **Cursor**

An object on the screen used to indicate the current pen position.

### **Density Factor (Hard Copy)**

Controls the pitch of the printout.

### **Device Service Routine (DSR)**

A routine to handle communications between TI-Artist and a specific input device.

### **External Reference**

A data word address that is to be used by several programs. The address is obtained by using a REF directive in the assembler.

### **FATbits**

The method of adding pixels used when enlarging a picture to maintain the proper perspective.

### **FCTN-"Quit"**

Used to return to main menu.

### **Fire Button**

The button on the joystick which is used to select icons or starting points on a picture.

### **Icon**

A picture on the menu used to select different functions.

### **Instances**

A special feature that allows you to store portions of your picture on disk and combine them with other programs or other pictures.

### **Line Spacing (Hard Copy)**

Determines how many 1/72" to skip for each line printed.

### **Magnification Factor (Hard Copy)**

Controls the size of the printout.

**Pixel**

A picture element. A pixel is the smallest element of a picture that can be separately addressed.

**Plot**

The process of turning pixels "on".

**Scaling**

The process of enlarging or reducing a picture to fit in a different size area.

**Slides**

A collection of 24 miniature designs that can be used as components in your picture.

**Vectors**

The method of defining lines by endpoints as opposed to pixels.

**Section 1****INTRODUCTION****OVERVIEW**

TI-ARTIST PLUS! allows you to generate high quality graphics. It is an easy to use, enjoyable, and versatile graphics tool. The displays used to guide you through the drawing process have been designed to make it easy for you to use TI-ARTIST PLUS! without referring to the manual! Many built-in functions aid in the drawing process; each of these functions is described in detail in the following sections. Additionally, TI-ARTIST PLUS! can use a variety of input devices through the use of external device service routines (DSR).

TI-ARTIST PLUS! has been divided into functional sections due to memory limitations. These sections are selectable from the first menu that appears after the title screen. There is a description of each of these sections in this document.

TI-ARTIST PLUS! offers many functions not previously available to users on the TI-99/4A. As an example, with the new vector capabilities you may now expand, shrink, and rotate selected sections of your drawing. There are also 3-D capabilities and many special effects.

TI-ARTIST PLUS! also works with a variety of current drawing program files to allow existing drawings to be converted to and from TI-ARTIST PLUS! format.

**CHANGING SECTIONS**

To return to the main menu from any of the program sections, you may press FCTN-"Quit" while on the first menu of each section. The system disk must be available. The picture will be retained throughout any of the program sections (even if you do conversions).

**CHANGING THE SCREEN COLOR**

The screen color, or background color, may be changed in TI-ARTIST PLUS! using the comma (,) key while the picture is being displayed. The screen color is not saved with the picture, and must be set (if desired) each time you load a picture.

## CONVENTIONS

There are several terms within this document which indicate a sequence of operations. To avoid the necessity of repeating the sequence each time it is encountered we will instead define the terms here for reference.

"Select" refers to the process of selecting a start or end point, or of selecting an icon, by pressing the fire button on the joy stick or pressing ENTER on the keyboard.

"Moving the cursor" means changing the current position of the cursor on the display by moving the joystick or pressing the arrow direction keys on the keyboard.

"Surround the area" refers to the process of selecting a starting point, moving the cursor to create a rubber band effect to define an area, and selecting a stop point. This sequence will leave the desired area surrounded for following functions.

## BEFORE YOU BEGIN

Please take a few minutes and make copies of your original disks. Save these in a safe place and use the copies that you made for day-to-day use.

TI-ARTIST PLUS! has become too large to fit on one single-sided/single-density disk. For those users who have either double-sided or double-density capability, it will be more efficient if all files are copied to one disk. For those users who have single disk systems, some disk swapping will be required to realize the full capability of TI-ARTIST PLUS!

## LOADING PROCEDURE

The title screen may be skipped by holding down any key during the loading process.

Once the title screen is present, press ENTER to continue.

TI-ARTIST PLUS! supports three loaders as follows:

### EXTENDED BASIC

The Extended BASIC loader is a file named "LOAD" and is contained on the TIAP-1 disk.

- Place the Extended BASIC cartridge in the cartridge slot.
- Place the TIAP-1 disk in drive #1.
- Select Extended BASIC from the TI title screen.

## LOAD and RUN

The Load and Run loader is a file named ARTIST contained on the TIAP-1 disk.

- Place the TIAP-1 disk in drive #1.
- Invoke the load and run option using DSK1.ARTIST

## PROGRAM FILE

The Program file loader is a file named ARTIST1 and is contained on the TIAP-1 disk.

- Place the TIAP-1 disk in drive #1
- Invoke the Program file loader using DSK1.ARTIST1

*Note that the drive which the Load and Run and Program File loaders use may be modified with the @NEWPATH program described below.*

## @NEWPATH

TI-ARTIST PLUS! may be configured and reconfigured any number of times to be run from any device. For example, let's suppose that you wanted TI-ARTIST PLUS! to load off of your Myarc ramdisk (128k card) instead of your disk drive. Simply copy the files from your TI-ARTIST PLUS! diskette onto your ramdisk, then use @NEWPATH to change the path to RD or any drive number that it is emulating.

@NEWPATH is located on the TIAP-2 diskette. To use the program, enter TI BASIC from the title screen and type OLD DSK1.@NEWPATH, then press enter. Type RUN, then press ENTER. The program will run and ask you several questions.

## WHAT PERIPHERAL CONTAINS TI-ARTIST PLUS!

] DSK1

The answer to this question is the devicename that the actual program is under right now. If you are using the two diskettes, you must refer to the TIAP-1 diskette. In the example, it was assumed that the TI-ARTIST PLUS! diskette was in disk drive 1. Please note that TI-ARTIST PLUS! can be copied onto any device, and the device that contains the TI-ARTIST PLUS! that you wish to have re-pathed should be entered here.

THE CURRENT PATH USED WITH THIS TI-ARTIST PLUS!  
] DSK.INSCEBOT

You are then told what the current path name is. In the example, the current path name was DSK.INSCEBOT. That happens to be the default when TI-ARTIST PLUS! was first shipped to you.

NEW PATH FOR THIS TI-ARTIST PLUS!  
(ENTER FOR NO CHANGE)  
] RD

It then asks you what you would like the new path for TI-ARTIST PLUS! to be. In the example, we used RD because that is what should be used for TI-ARTIST PLUS! to be run off the Myarc ramdisk (128k card).

Following this, TI-ARTIST PLUS! will load from the device specified.

## USING TI-ARTIST PLUS!

Welcome to TI-ARTIST PLUS! While we have retained all of the capabilities of the original TI-ARTIST, we have also added a tremendous number of new features. The functions have been divided into sections, as there is just not enough available memory to run everything at once. Once the system has been loaded, most functions for drawing are available on disk #2. You should require disk #1 only when loading, making movies, or printing.

### TI-ARTIST (Disk #2)

- \* Drawing
- \* Colors
- \* Saving/Loading pictures

### ENHANCEMENT (Disk #2)

- \* Copying
- \* Moving
- \* Slides
- \* Instances

### FONTS (Disk #2)

- \* Alphanumeric entry

### VECTORS (Disk #2)

- \* Scaling
- \* Rotations
- \* Special effects

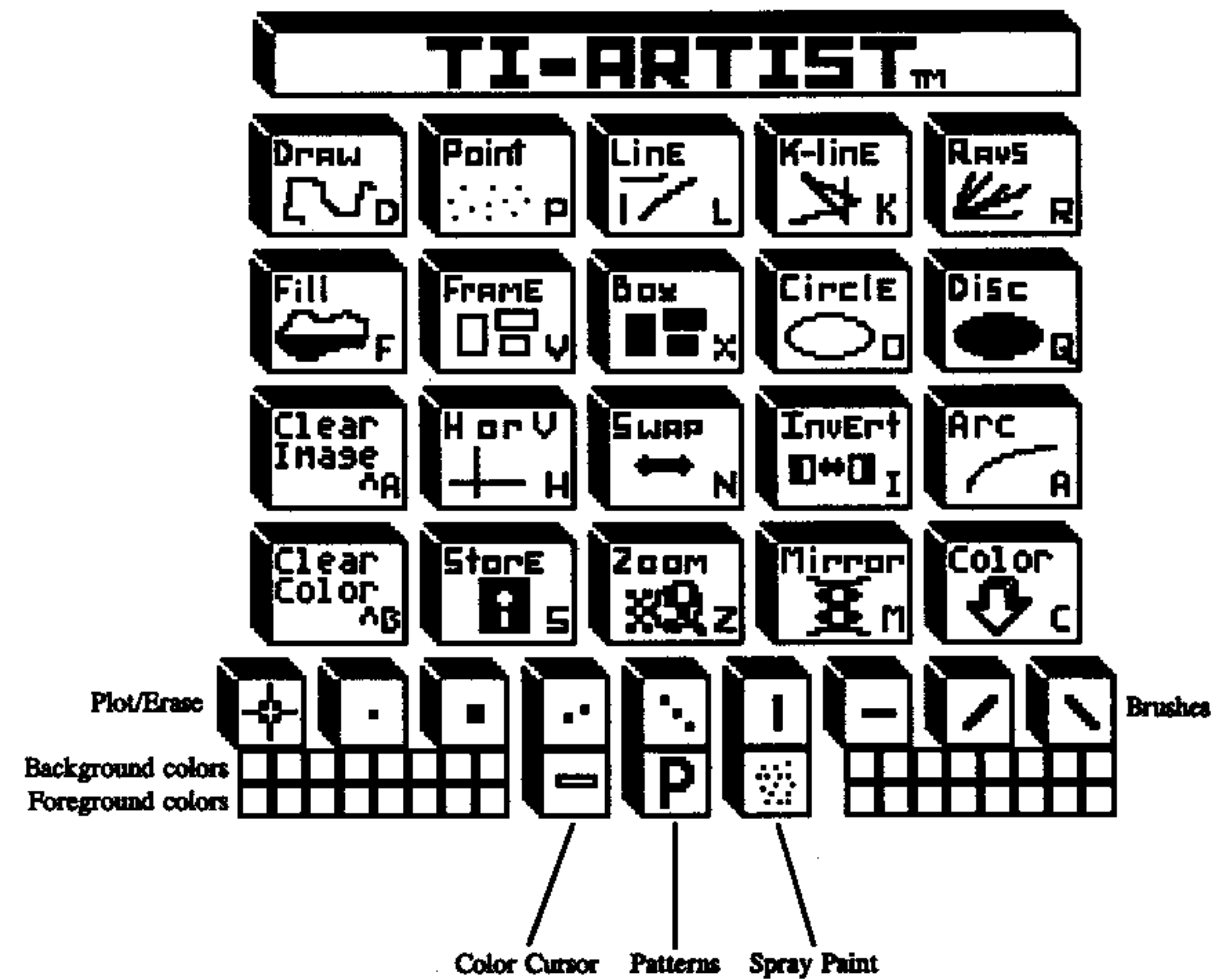
### MOVIES (Disk #1)

- \* Animation

### PRINT (Disk #1)

- \* Hard copy

# TI-Artist Section



Drawing, Editing, and Creating Graphics

## **TI-ARTIST**

This section of the manual pertains to the use of the TI-ARTIST portion of the package.

TI-Artist presents the artist with a menu of functions. The desired function is chosen by selecting the desired icon or by pressing the appropriate letter on the keyboard. The picture is then selected by pressing the space bar (subsequent depressions of the space bar will alternate between the functions menu and the picture). Once on the picture, the selected function may be performed. When a different function is desired, it may be selected by returning to the function menu or by pressing the desired function selector key.

Once the artist has completed a drawing (or at any intermediate stopping point), the current picture may be saved on disk and/or displayed on a variety of printer types.

*Note that while you are on the picture, you may control the cursor speed by pressing keys 1-9, with 1 being the fastest. You may also convert to a single-pixel single step operation by pressing 0.*

The following functions are supported:

### **DRAW**

The draw function lets you draw designs on your picture. To use the draw function, simply position the cursor over the desired pixel and press the fire button. A trail will be drawn as long as the fire button is depressed. You may also select a starting point from the keyboard and use the arrow direction keys to draw. By changing the brush styles, you can draw some interesting and unique shapes. By changing the state of the plot/erase icon, the draw function will also let you erase.

### **POINT**

The point function is very similar to the draw function with one minor difference. When using the point function it will only plot one pixel at a time. In every other aspect, the point function is the same as the draw function.

### **LINE**

The line function will let you plot individual lines on your picture. To draw a line, you must designate the endpoints of the line. To do this, simply move the cursor to one of the desired endpoints and select it. After the first endpoint is set, you will see a "rubber band" line. Just move the line until it touches the second desired endpoint and select this endpoint.



## K-LINE

The k-line function is very similar to the line function with one minor difference. When using the k-line function, it will let you draw a continuous line by using the previous line endpoint as the current k-line endpoint. In all other ways, the k-line function is the same as the line function.

## RAYS

The rays function is similar to the line function with two minor differences. First, when using the rays function, all of the lines drawn will be from the same origin. Second, the fire button only needs to be pressed (and held) once to create multiple rays. Aside from those differences, the rays function is the same as the line function.

## FILL

The fill function is used to fill a shape with a desired pattern. The fill function used in TI-ARTIST is a "smart fill". This means that it will look for openings and fill the entire shape regardless of where you start the fill. To use the fill function, position the cursor anywhere within the area to be filled and select it.

Note: At any time during the fill you may abort by pressing the space bar.

## FRAME

The frame function is used to draw individual rectangles on your picture, or to frame objects on the screen. To use the frame routine, you must first designate where you want a corner of the frame to appear and select the starting point. You will then see a "rubber band" frame on the screen. By moving an imaginary point around the screen, you can vary the size of the frame. When the frame is of the correct shape and size, select the endpoint.

## BOX

The box function is very similar to the frame function with one difference. When using the box function, after the box is drawn it will fill it in with the specified pattern. Aside from that difference, the box function is the same as the frame function.

Note: When the pattern is set to "P", and the plot/erase icon is off, the box function makes an exceptional "block eraser".

## CIRCLE

The circle function is used to draw individual circles on your picture. To use the circle function, you must first designate the center point of the circle. To do this, position the cursor over the desired center point and select it. Then, by means of an imaginary point, you may vary the radius of the "rubber band" circle. When it is the desired size and shape, press the fire button.

## DISC

The disc function is very similar to the circle function with one difference. When using the disc function, after the disc is drawn it will fill it in with the specified pattern. Aside from that difference, the disc function is the same as the circle function.

Note: When the pattern is set to "P", and the plot/erase icon is off, the disc function makes an exceptional "block eraser".

## CLEAR IMAGE

Your picture actually consists of two tables stored in memory: the pattern table (called "Image" in TI-ARTIST) and the color table. The pattern table contains all of the pixels of your screen and the color table contains the colors of these pixels. The clear image function is used to clear only the pattern portion of your picture, leaving the color portion untouched. "Control A" will clear the image from any section of TI-ARTIST PLUS!

Note: To clear your entire picture you must both Clear image and Clear color. When you are in the zoom mode, this function works only within the area displayed on the screen. Other portions of your picture are not affected.

## H OR V

The H or V function is used to draw individual horizontal or vertical lines on your picture. To use the H or V function, you must first designate one of the endpoints of the lines. To do this position the cursor over the desired starting point and select it. You may then move an imaginary point horizontally or vertically to change the length of the "rubber band" line. When it is the desired length, select the endpoint.

Note: The main use of this function becomes apparent when you are using an analog device (such as a mouse) rather than a joystick. Analog devices are generally more difficult to draw straight lines with than a joystick.

## SWAP

The swap function is used to swap colors around on your picture. To use the swap function, you must first set the cursor to the color that you wish to become the new color. Then just select the area to be colored.

Note: When you are in the zoom mode, this function works only within the area displayed on the screen. Other portions of your picture are not affected.

## INVERT

The invert function is used to invert pixels on your picture. It sets pixels that are "on" to "off" and vice versa. To use the invert function, all you have to do is select the area to be inverted.

Note: When you are in the zoom mode, this function works only within the area displayed on the screen. Other portions of your picture are not affected.

## ARC

The ARC function is similar to LINE except that it generates a curved line between two points. Simply select the starting and ending points and a curved line will be drawn between them. Before you select the ending point a rubber band will show you how the arc will appear.

## CLEAR COLOR

Your picture actually consists of two tables stored in memory: the pattern table (called "Image" in TI-ARTIST) and the color table. The pattern table contains all of the pixels of your screen and the color table contains the colors of these pixels. The clear color function is used to clear only the color portion of your picture, leaving the pattern portion untouched. "Control B" will clear color from any section of TI-ARTIST PLUS!

Note: To clear your entire picture you must both Clear color and Clear image. When you are in the zoom mode, this function works only within the area displayed on the screen. Other portions of your picture are not affected.

## STORE

When the store function is selected, a store menu will appear on the screen. From this menu you may load pictures, save pictures, or index the pictures on a diskette.

## ZOOM

The zoom function is used to magnify a portion of your picture for detailed work. When the zoom function is selected, an 8 x 6 character frame will appear on the screen. The area inside

of the frame will be magnified when you select it. This process takes several seconds, so please be patient. Unlike other drawing programs, TI-ARTIST PLUS! allows you to use any of the other functions once the image is magnified.

## MIRROR

When the mirror function is selected, every function that you use will result in four reflections of the design being placed on the screen. This function is fun to use and can produce very amusing effects.

Note: When you are in the zoom mode, this function works only within the area displayed on the screen. Other portions of your picture are not affected.

## COLOR MENU

This function will cause the color menu to be superimposed on the drawing picture. Each time this icon is selected the color menu will swap states. This allows these functions to be selected from the drawing palette with no need to return to the function menu.

## PLOT/ERASE

The plot/erase icon is used to set the state of the pixels used in all of the functions. If it is highlighted, then all of the functions will work by plotting pixels. If it is off, then all of the functions will work by erasing pixels. This icon may also be toggled by pressing "FCTN-" or just ".".

## BRUSHES

These icons determine what brush pattern will be used when on the drawing palette. The system defaults to a single pixel brush.

## COLOR CURSOR

The color cursor is used to modify only the color portion of your picture. It moves on the color boundaries set by bit-map mode, so that you may accurately place colors.

## PATTERNS

The pattern indicator icon is used to select one of 10 patterns (plus normal) that will be used in the fill, box, or disc. When this icon is displaying a "P" it is in the normal mode, in which the pattern is completely filled in.

Note: When the plot/erase icon is off, all of the patterns will be inverted. Therefore, when the pattern is displaying a "P", the disc and box functions will act as block erasers.

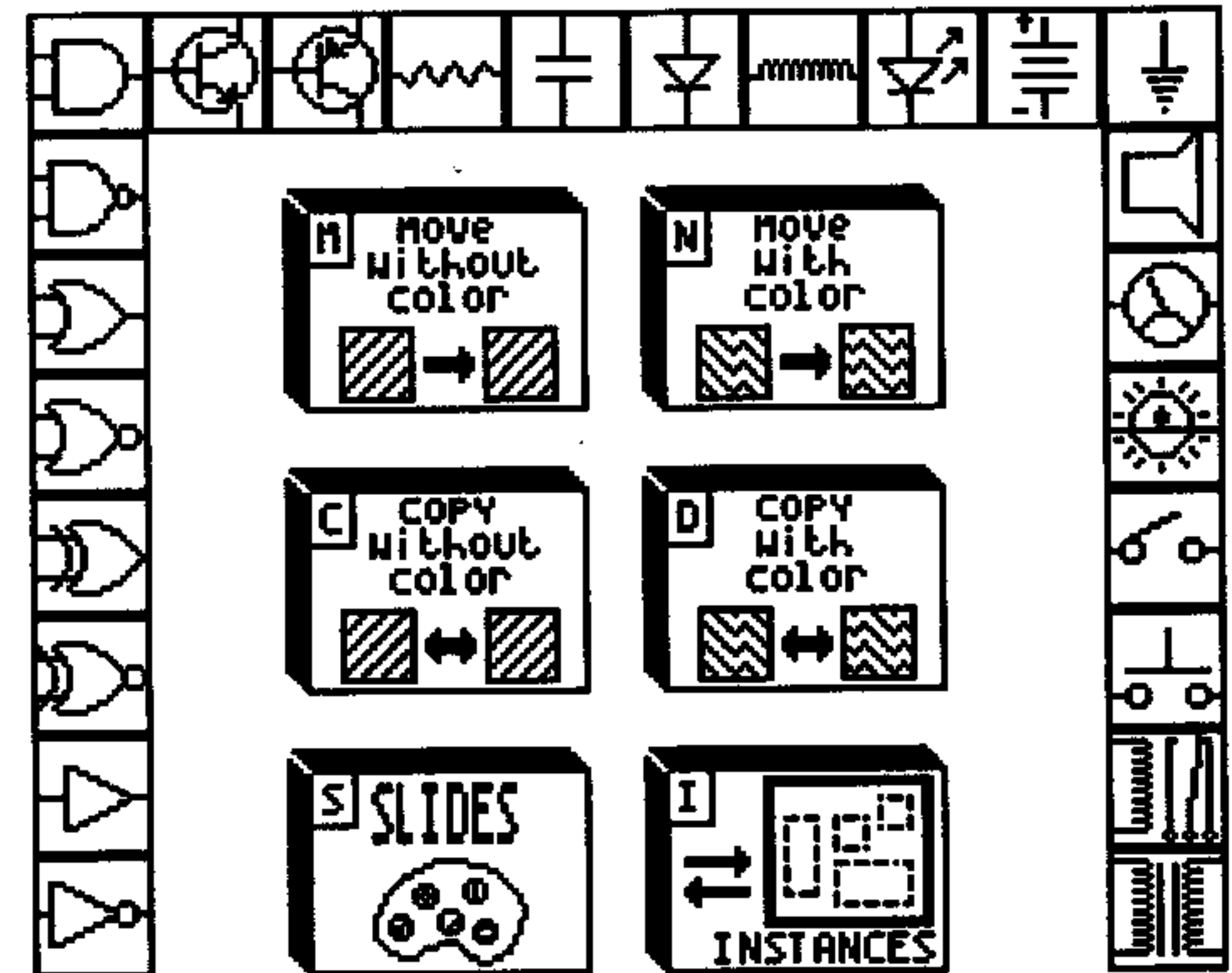
### SPRAY PAINT

Selecting this icon will cause the spray pattern to be placed on the palette instead of a brush style. While this mode is selected you are limited to the DRAW mode.

### SELECTING THE RIGHT COLORS

The foreground/background colors may be set by choosing any of the color blocks at the bottom of the menu. Choosing the bottom row will set the foreground color, and choosing the top row will set the background color.

# Enhancement Section



Moving, Copying, Slides, and Instances

## **ENHANCEMENT**

This section of the manual pertains to the use of the ENHANCEMENT portion of the package. To select any of the functions within the ENHANCEMENT, you must either select the desired icon or press the appropriate letter on the keyboard. To switch between the menu and your picture, press the space bar.

### **MOVE WITHOUT COLOR**

The move without color function is used to move a selected portion of your picture. To use this function, first designate one of the corners of the move area by positioning the cursor over the desired pixel and selecting it. You will then see a "rubber band" box appear on the screen. Expand the box to surround the area that you wish to move. When you select again, the area that you surrounded will be "picked up". Move the box to the location where you wish to drop the surrounded area. You can see what it will look like by pressing "T" on the keyboard. When you are satisfied with its position, select it, and the area will be dropped.

Note: When you first surround the area to be moved, the corner that you start with will automatically become the upper-left corner of the dropped image. Keeping this in mind, you may horizontally or vertically flip the surrounded image if you desire mirrored images.

### **MOVE WITH COLOR**

The move with color function is very similar to the move without color function with one difference. When using the move with color, the cursor will move along the color boundaries set in bit-map mode. Other than that, the move with color function is the same as the move without color function.

### **COPY WITHOUT COLOR**

The copy without color function is used to copy a selected portion of your picture. To use this function, first designate one of the corners of the copy area by positioning the cursor over the desired pixel and then selecting it. You will then see a "rubber band" box appear on the screen. Expand the box to surround the area that you wish to copy. When you select again, the area that you surrounded will be "picked up". Move the box to the location where you wish to drop the surrounded area. You can see what it will look like by pressing "T" on the keyboard. When you are satisfied with its position, select it, and the area will be dropped.



Note: When you first surround the area to be copied, the corner that you start with will automatically become the upper-left corner of the dropped image. Keeping this in mind, you may horizontally or vertically flip the surrounded image if you desire mirrored images.

### **COPY WITH COLOR**

The copy with color function is very similar to the copy without color function with one difference. When using the copy with color, the cursor will move along the color boundaries set in bit-map mode. In all other ways, the copy with color function is the same as the copy without color function.

### **SLIDES**

Slides are a collection of 24 miniature designs that can be used as components in your picture. You may independently use, define, erase, or rotate them. The enhancement boots up with a slide set of electronic symbols as an example.

To select any of the slides, position the cursor over the desired slide on the menu and select it, which selects the slide and presents the current picture. You may then move the slide around and select the point where you wish to drop it.

Exit by pressing the space bar.

When the slides function is selected, a slides menu will appear on the screen. From this menu, you may load, save, and index slide files.

#### **Steps involved in manipulating slides**

##### **Define slides**

- \* select the slide box that you wish to define
- \* move the box to surround the area to become a slide
- \* select

##### **Erase slides**

- \* select the slide box that you wish to erase
- \* position the box to a blank portion of the picture
- \* select

##### **Rotate slides**

- \* select the slide box that you wish to rotate
- \* press the "R" key once for each 90 degrees of rotation

##### **Load slides file**

- \* select the SLIDES icon
- \* select the LOAD option
- \* enter the filename of the slides file that you wish to load and press ENTER

##### **Save slides file**

- \* select the SLIDES icon
- \* select the SAVE option
- \* enter the filename that you wish to save the current slides

##### **Index slide files**

- \* select the SLIDES icon
- \* select the INDEX option
- \* enter the device name of the device to index and ENTER

### **INSTANCES**

Instances are sections of larger pictures that may be used within other pictures or in your own programs. Instances allow you a simple means of transporting portions of your pictures into a readily acceptable form for other uses. For example, how many times have you wanted to design a logo or emblem in a drawing program and incorporate it into your own program? With TI-ARTIST PLUS!, you can! Not only do instances let you do that, but they allow you to design your own character fonts, icons, and more. The file type that instances use is directly readable by many word processors, editors, and the assembler. They are saved in a DIS/VAR 80 file using decimal numbers separated by commas. Since instances are saved on character boundaries, the data in these files are character definitions.

Note: When you first surround the area to be used as an instance, the corner that you start with will automatically become the upper-left corner of the saved instance. This allows you to horizontally or vertically flip the saved instance.

#### **Steps Involved In Manipulating Instance Files**

##### **Load an instance**

- \* enter the filename of the instance file that you wish to load
- \* position the box at the desired location and press "I" to test
- \* press fire button to permanently drop it

##### **Save an instance**

- \* enter the filename that you wish to save the instance under
- \* position the cursor over one of the corners of the instance
- \* press the fire button

- \* expand the box to surround the instance that you wish to save
- \* select when you are ready to save the instance

#### **Index instance files**

- \* select the INSTANCE icon
- \* select the INDEX option
- \* enter the device name of the device to index

## **Section 5**

### **FONTS**

The FONTS Section allows you to place alphanumeric data in your picture. From this menu you may edit the text to be placed on your picture. There is an options section which allows different attributes to be attached to your alphanumeric data. There are three options available from left to right, as follows:

- |    |          |                       |
|----|----------|-----------------------|
| 1) | Outline  | (Y/N)                 |
| 2) | Shadow   | (Y/N)                 |
| 3) | Position | (Left, Right, Center) |

#### **FONT FILES**

The FILES menu is accessed by pressing "F" while on the selection portion of the FONTS menu. It allows font files to be indexed and loaded so that you may place text on the picture. There are several different fonts supplied with TI-ARTIST PLUS! and many more available as separate products. You may return to the FONTS menu by pressing the space bar.

#### **INDEX FONT FILES**

Use this to get an index of all font files on the specified device. The files will display on the screen as they are indexed. A file may be selected for Load Font File by placing the highlighted bar on top of the desired file and pressing the fire-button.

Sample Devices:

DSK1, DSK2, DSK3, DSK4  
RD, DSK5, DSK6  
WDS1

Floppy disk drives  
Myarc, Horizon ramdisks  
Myarc hard disk

#### **LOAD FONT FILE**

This will load a font file into memory. The font file that is loaded will determine what characters are available to place on the picture. The amount of RAM left for fonts will be displayed on the second-to-last row of the screen after loading a font. This is for debugging purposes, and for those wishing to create new fonts.

## EDITING TEXT

Enter your text in the text section after typing "E" for edit while on the selection portion of the FONTS menu. You may use up to 14 lines, but they might not all fit on the screen when you place the text. The amount of text you may place on the screen depends on the size of the font. It will only allow you to type in the characters that are available in the currently loaded font that is loaded. Use F9 to exit from edit mode.

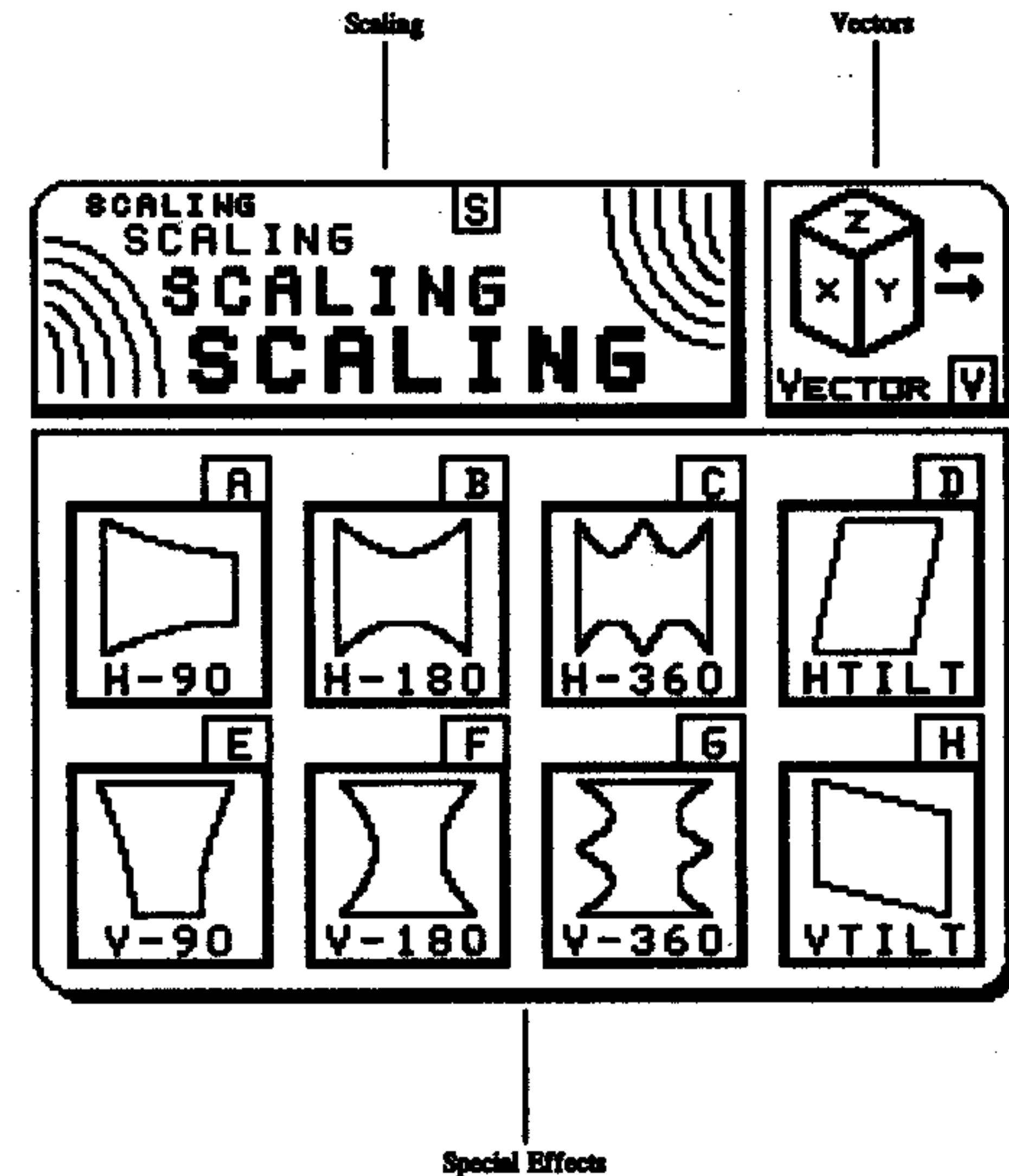
## EDIT ATTRIBUTES

While in edit mode, you may use F7 or the direction arrows to switch between text and options sections. The options section allows the Outline, Shadow, and Left-Center-Right attributes to be changed.

## PLACING TEXT ON THE PICTURE

After you have edited the desired text in the text section, return to the selections portion of the FONT menu by pressing F9. Switch to the picture by pressing the space bar. Once on the picture, position the text by using the arrow keys and test the placement with the "T" key. Once you are satisfied with the placement, permanently place the text with the ENTER key. Multiple placements may be accomplished by moving the text and again pressing the ENTER key.

# Vectors Section



## Vectors, Scaling, and Special Effects



## **VECTORS**

### **VECTOR FILE: DEFINITION**

A picture is made up of 49,152 pixels. When you save a picture to a picture file, you save all 49,152 pixels, regardless of whether they are on or off. When you create a vector file, only horizontal vectors for the on pixels are saved. This allows calculations to be done only on the visible parts of your picture. This is much faster to do, and in some ways it is more accurate.

Vector files are used in much the same way that instances are used. You may even keep clip-art as vector files, if you wish. They are very handy because they allow you to do operations and scale the image before it is placed.

### **CREATE (SAVE) VECTOR FILE**

Creating a vector file lets you convert a section of the picture into vectors. Using vectors allows you to Rotate, Spin, Tip, Horizontal & Vertical range, and Scale by percentages.

Create a vector file:

- select Vector from the vector menu
- select Save
- enter file name and press ENTER
- surround the portion of the drawing to be saved

*Note: Vector files are described in detail; see Appendix A.*

### **INDEX DISK VECTOR FILES**

This function obtains an index of all vectors on the specified device. The index will display on the screen as they are indexed. A file may be selected for Load Vector File by placing the highlighted bar on top of the desired file and pressing the fire-button.

Sample Devices:

DSK1, DSK2, DSK3, DSK4  
RD, DSK5, DSK6  
WDS1

Floppy disk drives  
Myarc, Horizon ramdisks  
Myarc hard disk

## Index vector files

- \* select Vector from the vector menu
- \* select Index
- \* enter device name and press ENTER

## LOAD VECTOR FILE

This will load vector files created with TIA (2-DIMENSION), or vector files created with other programs (3-DIMENSION). 2-DIMENSION vector files are made with the create vector file option on this menu. 3-DIMENSION vector files cannot be created with TI-ARTIST PLUS! V1.0. Rather, 3-DIMENSION vector files should be created using BASIC or other languages to graph functions, bar charts, or unique 3D plots.

Pick the file either with this option, or by pressing the fire button while an indexed file is highlighted. Select the operations and attributes to be used.

Load a vector file:

- \* select Vector from the vector menu
- \* select Load
- \* enter file name or select from index list
- \* press ENTER

Once the vector file has been loaded, the attribute list will be displayed for modification.

## VECTOR OPERATIONS & ATTRIBUTES

|         |  |
|---------|--|
| Rotate: | X-Y plane; 0-360 degrees                       |
| Spin:   | X-Z plane; 0-360 degrees                       |
| Tip:    | Y-Z plane; 0-360 degrees                       |
| Horiz:  | Causes horizontal range (spin), try 180 (best) |
| Vert:   | Causes vertical range (tip), try 180 (best)    |
| X scal: | Percentage of X to use; 100 = normal           |
| Y scal: | Percentage of Y to use; 100 = normal           |
| Z scal: | Percentage of Z to use; 100 = normal           |

Once the vector file has been loaded and the attribute list has been displayed:

- \* enter the desired values for each attribute
- \* press ENTER at last attribute to perform operations
- \* position dotted area to desired location on drawing

- \* press "T" to test placement on screen
- \* press ENTER to permanently place data

*Note that the vector file is not destroyed by this process. If the data did not appear exactly as desired, do not permanently place data. Instead, return to the vectors menu and reload the vector file. Then repeat the attribute list entries and retry the positioning procedure.*

## SCALING

Scaling is used to make a section of the picture bigger or smaller. It will allow you to change the width and height independently. First select the area to be scaled. When the lines are dashed you may select the new matrix. Use the diagonal keys to adjust the width and height at the same time; otherwise, use left-right movements of the joystick to control width, and up-down movements to control height.

Scaling:

- \* select SCALING option on menu
- \* space to drawing palette
- \* surround the area to scale
- \* position up/down and/or left/right to define scaling
- \* press ENTER to perform function

*Note that FATbits are used to make pixels bigger if the matrix is bigger. Pixels are overlapped if the matrix is smaller.*

## SPECIAL EFFECTS

The Special Effects are used to enhance selected areas of the picture. They allow the horizontal and vertical parts of an area to be scaled along a range. The area must first be selected using the standard click-surround-click method. The intensity must then be selected by moving the cursor. The guide lines show the intensity of the Special Effect and what the result will resemble.

H-90 through H-360:

- \* select option on menu
- \* press SPACE to picture
- \* surround the desired area
- \* position up or down to determine intensity of effect
- \* press ENTER to perform function

#### Horizontal Tilt:

- \* select option on menu
- \* press SPACE to picture
- \* surround the area
- \* position left or right to define amount of tilt
- \* press ENTER to perform function

#### V-90 through V-360:

- \* select option on menu
- \* press SPACE to picture
- \* surround the area
- \* position left or right to determine intensity of effect
- \* press ENTER to perform function

#### Vertical Tilt:

- \* select option on menu
- \* press SPACE to picture
- \* surround the area
- \* position up or down to define amount of tilt
- \* press ENTER to perform function

## Section 7

### MOVIES

#### MOVIES: DEFINITION

Movies are a collection of picture frames stored in a file. Actually, they are a collection of changes between frames. A movie usually consists of a base picture (first frame) and a series of frames with small changes on each frame. When this sequence of frames is viewed with the PLAY command, it appears as an animated movie. With the PLAY command you may specify the rate in frames per second at which the sequence is to be viewed.

The procedure to use in generating a movie file is as follows:

- \* go to the MOVIE section
- \* CREATE the movie file
- \* go to the TI-ARTIST section
- \* load or create the desired base picture
- \* go to the MOVIE section
- \* USE the movie file
- \* APPEND the current picture
  
- \* go to the TI-ARTIST section
- \* modify the picture for the next frame.
- \* go to the MOVIE section
- \* USE the movie file
- \* APPEND the current picture

Repeat the last five steps for each frame to be added.

When the movie is complete it may be played with the PLAY command.

#### CREATE COMMAND

The CREATE command creates a movie file for use with the remainder of the movie commands; e.g.,

CREATE DSK6.MOVIE {border color}

creates a file named MOVIE\_M on DSK6. Once this file has been created, you may reference it with the remainder of the movie commands. The optional value, *border color*, allows you to specify the background color of your movie; e.g.,

## CREATE DSK6.MOVIE 7

would specify that the background color for your movie is cyan.  
The available colors are as follows:

|    |              |    |              |
|----|--------------|----|--------------|
| 00 | transparent  | 08 | medium red   |
| 01 | black        | 09 | light red    |
| 02 | medium green | 10 | dark yellow  |
| 03 | light green  | 11 | light yellow |
| 04 | dark blue    | 12 | dark green   |
| 05 | light blue   | 13 | magenta      |
| 06 | dark red     | 14 | gray         |
| 07 | cyan         | 15 | white        |

## USE COMMAND

The Use command selects the file which will be used by the GETLAST, APPEND, and PLAY commands; e.g.,

DSK6.MOVIE

## SHOW COMMAND

The SHOW command will cause the current picture to be displayed.

## GETLAST COMMAND

The GETLAST command will run through the current movie and stop with the picture on the screen replacing your current picture in memory. It is used to obtain the last frame of a movie.

*Note: This command will erase your current picture in memory.*

## APPEND COMMAND

The APPEND command adds the current picture onto the current movie. You may specify the number of frames you wish to have appended in order to provide an apparent "pause" in the movie sequence when it is played; e.g.,

APPEND 10

would append 10 copies of the current picture onto the movie.

## PLAY COMMAND

The PLAY command will show the current movie file at the rate specified in frames per second; e.g.,

PLAY 5

would play the current movie at 5 frames per second.

## CATALOG COMMAND

The CATALOG command will give you a directory of the specified device; e.g.,

CATALOG DSK6

will give you a directory of DSK6.

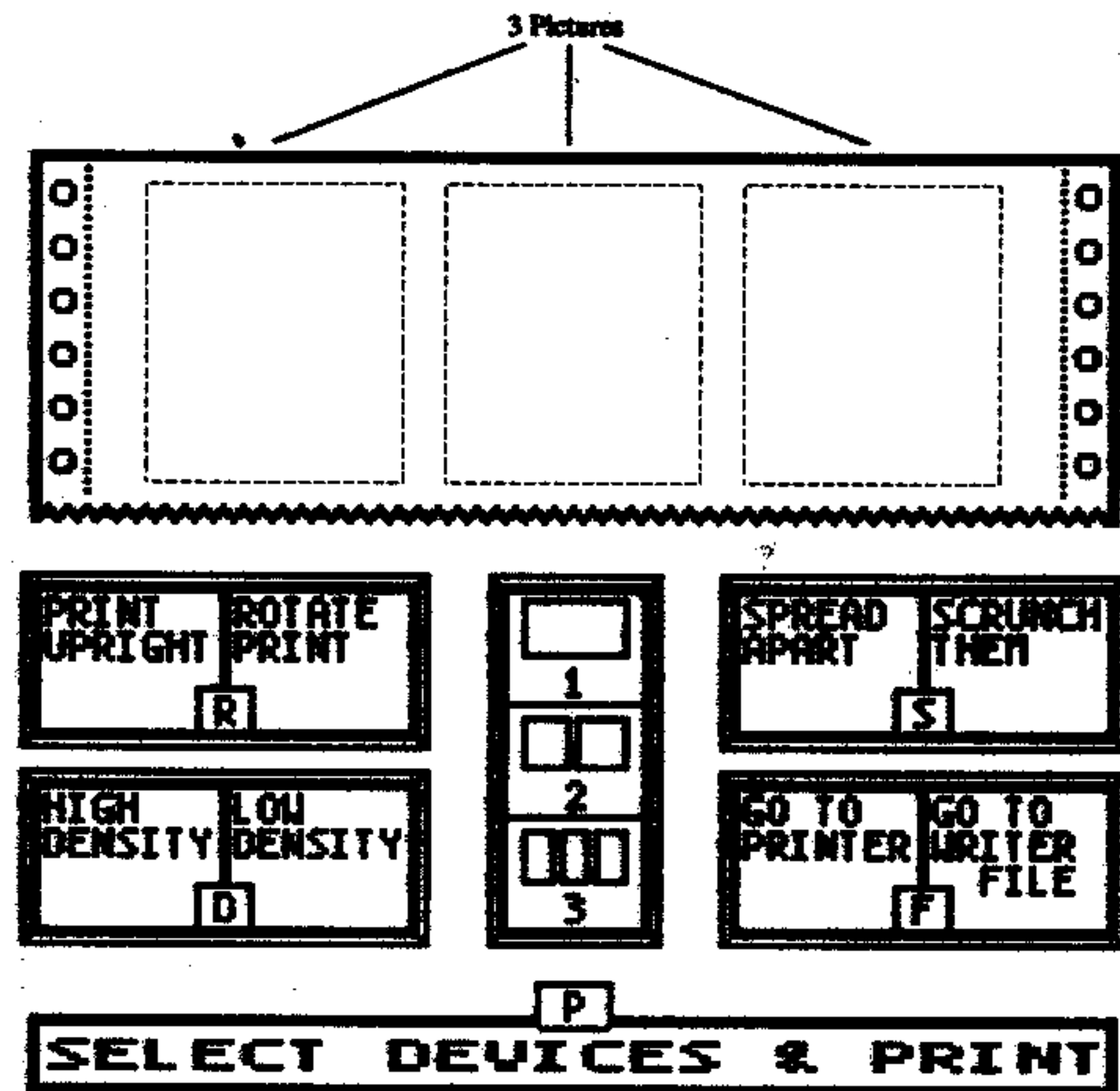
## INDEX COMMAND

The INDEX command will give you a directory of the specified extension on the specified device; e.g.,

INDEX DSK6 M

will give you a directory of all of the movie files on DSK6.

# Print Section



Printing pictures

## **PRINT**

Printing is accomplished by selecting the PRINT option from the main menu. This will advance to the primary print menu.

### **PRINT OPTIONS**

- \* from 1 to 3 pictures may be printed (1, 2, 3)
- \* pictures may be in upright (portrait) or rotated (landscape) position (R)
- \* printing may be in high or low density (D)
- \* pictures may be separated or joined (S)
- \* you may go directly to the printer or to a disk file (F)

The options on this menu may be changed by pressing the keys shown in the boxes.

### **SELECTING PICTURES**

The paper outline at the top of this menu shows approximately how the pictures will be positioned on the printer. Dotted lines on the outline indicate that no border outline will be printed. A solid line indicates where the borders will be printed. This outline will be adjusted as options are changed.

Entering 1, 2, or 3 for the number of pictures to print will advance to the picture options menu. On this menu the location of the pictures to be printed may be specified. The picture currently in memory and/or pictures from disk files may be printed. The memory picture is defined by placing an asterisk (\*) in the first column of the name.

### **PICTURE OPTIONS**

In addition to filenames, several other options may be specified on this menu as follows:

- \* color shading (Y/N)
- \* each picture may have reverse image (Y/N)
- \* each picture may be outlined (Y/N, Top, Bottom, Middle)

The cursor may be positioned on the options at the right side with the TAB key (function 7) or by using the arrow directional keys. An ENTER at the last line will return you to the main print menu.



Note that with the outline options, you may create an outlined printed picture which is composed of up to 3 horizontal sections and as many vertical sections as desired. The additional vertical sections are obtained by sequential print functions. The first print function would have the top and outer sides outlined. The last print option would have the bottom and outer sides outlined. The middle sections would have only the outer sections outlined.

## PRINTING

When all options are set as desired, the printing function may be started by entering the letter "P", and entering the printer devicename.

*Note: When printing, the devicename for your printer must have a .CR.LF after it to suspend the carriage returns and line feeds from being sent to your printer automatically. As an example, let's say your printer is hooked up to your second serial port at 2400 baud. The devicename of RS232/2.BA=2400.DA=8.CR.LF should be used.*

## PRINTER PROFILE FILES

To accomodate different printer types, there is a printer profile file for each different type of printer. The current printer profile is contained in a file named "PRINTER" and is delivered with an EPSON printer profile contained in it.

## @PRINTSET

PRINTSET is a BASIC program which translates printer profile files to a type usable to the TI-ARTIST PLUS! system. To use this program, place the system disk in drive #1 and enter BASIC. To load the program enter:

```
OLD DSK1.@PRINTSET
RUN
```

Enter the number corresponding to your printer and the program will translate the appropriate file into "PRINTER".

## INPUT DEVICE

### WHAT IS AN INPUT DEVICE?

An input device is generally a drawing utensil. Whether it be the joystick, mouse, touch tablet, or a space tablet, they all require a Device Service Routine (DSR) to interface them to TI-ARTIST PLUS!

TI-ARTIST PLUS! allows the input DSR to be replaced by the user. There are several DSR's available for use. When the system is loaded, it will utilize the DSR currently contained in file **EXTDSR**. As delivered, this file contains the joystick DSR. You may replace the DSR after the system is loaded by selecting the "INPUT DEVICE" option from the main menu. The following DSR's are delivered with the TI-ARTIST PLUS! system:

| File | Device |
|------|--------|
|------|--------|

See the >README file on your TI-ARTIST PLUS! diskette

If you wish, you may write your own input device DSR's. TI-ARTIST PLUS has a full object code loader for these DSR's. Listed below are a few rules that must be followed when you are writing your own input device DSR's:

- 1) The program must be assembled in compressed object code.
- 2) The program must be assembled in relocatable form.
- 3) To access internal information from TI-ARTIST, the DSR program should Externally Reference certain data words. Below is a list of them:

| LABEL | FUNCTION                             |
|-------|--------------------------------------|
| ZOOM  | tells whether or not zoom mode is on |
| ZOOM2 | tells whether or not to ignore zoom  |
| A     | X location 1                         |
| B     | Y location 1                         |
| C     | X location 2                         |
| D     | Y location 2                         |



|        |   |
|--------|---|
| E      | X location 3                                      |
| F      | Y location 3                                      |
| G      | X location 4                                      |
| H      | Y location 4                                      |
| MNA    | X location 5                                      |
| MNB    | Y location 5                                      |
| WNA    | X location 6                                      |
| WNB    | Y location 6                                      |
| XMIN   | minimum acceptable X location                     |
| XMAX   | maximum acceptable X location                     |
| YMIN   | minimum acceptable Y location                     |
| YMAX   | maximum acceptable Y location                     |
| FIRE   | tells whether or not fire button has been pressed |
| SPACE  | tells whether or not space bar has been pressed   |
| DELAY  | tells whether or not to delay for fast speed      |
| DELAY2 | tells whether or not to delay for slow speed      |
| DELCNT | delay count for fast speed                        |
| DELCN2 | extra delay count for slow speed                  |
| CTABLE | address of color table in CPU memory              |
| PTABLE | address of pattern table in CPU memory            |

Data words that are used as indicators have two states. If they are true, then all the bits are on (>FFFF), and if they are false, then all of the bits are off (>0000).

The data words for X and Y locations must be accessed using R15 as an index register and using A and B as the base address. R15 must be multiplied by 2 to make it a word index. Any references for X and Y locations should be @A(R15) and @B(R15). Furthermore, R14 is used to tell whether or not to use a status test on the fire button. If true, the fire button may only be pressed once, if false, the fire button may be held down.

### CUSTOMIZING

You can customize your TI-ARTIST PLUS! to power up with your favorite input device DSR. To do this, just copy your DSR onto your TI-ARTIST diskette and name it EXTDSR. Before you do this, please make sure that you save the original EXTDSR onto another disk; otherwise you may lose the joystick DSR.

## CONVERSIONS

### LOAD PICTURE

When the load picture option is selected, a list of program names will be listed on the screen. Select the name of the program that the picture you are going to load originated from. Then enter the filename of the picture to be loaded.

### VIEW PICTURE

The view picture option is used to see what picture is currently loaded. Just press "V"; and when you are done viewing, press the space bar.

### SAVE PICTURE

When the save picture option is selected, a list of program names will be listed on the screen. Select the name of the program that the picture you are going to save is to be compatible with. Then enter the filename of the picture to be saved.

## **APPENDICES**

### **FILENAME EXTENSIONS ( \_C, \_P, \_F, \_S, \_I, \_V, \_M)**

TI-ARTIST PLUS! uses a common technique to denote to the user, and the program, the different types of files that are used. They are called filename extensions. There are a total of 7 filename extensions that TI-ARTIST PLUS! uses to keep track of various files. Below is a description of each:

| <b><u>EXTENSION</u></b> | <b><u>DESCRIPTION</u></b>    |
|-------------------------|------------------------------|
| <b><u>_C</u></b>        | color portion of a picture   |
| <b><u>_P</u></b>        | pattern portion of a picture |
| <b><u>_F</u></b>        | character font file          |
| <b><u>_S</u></b>        | slides file                  |
| <b><u>_I</u></b>        | instance file                |
| <b><u>_V</u></b>        | vector file                  |
| <b><u>_M</u></b>        | movie file                   |

### **FILE SETUP - INSTANCES**

| <b><u>RECORD NUMBER</u></b> | <b><u>DESCRIPTION</u></b>              |
|-----------------------------|--|
| <b>0</b>                    | (characters wide, characters high)     |
| <b>1-EOF</b>                | (each record contains one char def)    |
| <b>Example:</b>             |  |
| <b>3,2</b>                  | (3 characters wide, 2 characters high) |
| <b>1,1,1,1,1,1,1</b>        |  |
| <b>2,2,2,2,2,2,2</b>        |  |
| <b>3,3,3,3,3,3,3</b>        | (Each record contains one char def)    |
| <b>4,4,4,4,4,4,4</b>        |  |
| <b>5,5,5,5,5,5,5</b>        |  |
| <b>6,6,6,6,6,6,6</b>        |  |

## FILE SETUP - CHARACTER FONTS

### RECORD NUMBER DESCRIPTION

[ 0 ASCII character being defined  
[ 1 characters wide, characters high, pixels to skip  
[ 2-EOSeq definition of character

[ This sequence is repeated for each character in the font file.

Example:

C (ASCII character)  
2,1,12 (2 chars wide, 1 char high, and skip 12 pixels)  
1,1,1,1,1,1,1,1  
2,2,2,2,2,2,2,2  
D (next ASCII character to define)  
1,2,11 (1 char wide, 2 chars high, and skip 11 pixels)  
1,1,1,1,1,1,1,1  
2,2,2,2,2,2,2,2

## FILE SETUP - VECTOR FILES

### RECORD NUMBER DESCRIPTION

0 LOWX,HIX,LOWY,HY,LOWZ,HIZ  
1 VECTOR COUNT,"2DIMENSION"  
2 X-OFFSET,Y-OFFSET,0,0,0,0  
3 RANGLE,SANGLE,TANGLE,SRANGE,STRANGE,0  
4 XSCALE,YSCALE,ZSCALE,XRASH,YRASH,ZRASH  
5-(EOF-1) Vector Data, in the form of: X1,Y1,Z1 X2,Y2,Z2  
LAST "TIAPLUS V1.0"

## FILE SETUP - PRINTER PROFILE FILES

### RECORD NUMBER DESCRIPTION

0 XPRMAX  
maximum dots per line, approx 1024  
1 TOP BIT MSB  
is top dot most significant bit in output byte

2

SPCSPC

width in dots of space character  
usually 12 or 16  
if printout is not centered, change this

3

TYPE

0=black & white printer 1=color printer

4

BEG

codes for beginning of printout

5

AFTER

codes sent after printout is complete

6

ENTG1

codes to enter graphics for 1 upright  
must include the number of bytes to print  
for single picture (see table)

7

ENTG2

codes to enter graphics for 2 upright  
must include the number of bytes to print  
for single picture (see table)

8

ENTG3

codes to enter graphics for 3 upright  
must include the number of bytes to print  
for single picture (see table)

9

ENTG1R

codes to enter graphics for 1 rotated  
must include the number of bytes to print  
for single picture (see table)

10

ENTG2R

codes to enter graphics for 2 rotated  
must include the number of bytes to print  
for single picture (see table)

11

ENTG3R

codes to enter graphics for 3 rotated  
must include the number of bytes to print  
for single picture (see table)

12

CR

codes sent after a pass

13

LF

codes sent to advance line

14

EXIT

codes sent between pictures

15

BLINE

codes sent between 2 passes on high density

ENDS HERE IF TYPE=0, IF TYPE=1 THEN THIS ALSO:

|    |       |              |
|----|-------|--------------|
| 16 | COL01 | BLACK        |
| 17 | COL02 | MEDIUM GREEN |
| 18 | COL03 | LIGHT GREEN  |
| 19 | COL04 | DARK BLUE    |
| 20 | COL05 | LIGHT BLUE   |
| 21 | COL06 | DARK RED     |
| 22 | COL07 | CYAN         |
| 23 | COL08 | MEDIUM RED   |
| 24 | COL09 | LIGHT RED    |
| 25 | COL10 | DARK YELLOW  |
| 26 | COL11 | LIGHT YELLOW |
| 27 | COL12 | DARK GREEN   |
| 28 | COL13 | MAGENTA      |
| 29 | COL14 | GRAY         |

### COLOR ALIASING

Most color printers do not support all 14 colors. You can have several colors on the screen use the same color on the printout by using aliasing. This is done by having a pointer to another color sequence instead of an actual color sequence placed in the unavailable COL?? record number. The syntax for making a reference to another color sequence is '=' n where n is the COL number.

For example:

The following are records 16-29 of the STAR NX-1000 RAINBOW printer profile file.

| COLOR | RECORD # | IN FILE  | SCREEN COLOR | PRINT COLOR |
|-------|----------|----------|--------------|-------------|
| COL01 | 16       | 27 114 0 | black        | BLACK       |
| COL02 | 17       | 27 114 6 | medium green | GREEN       |
| COL03 | 18       | '=' 2    | light green  | GREEN       |
| COL04 | 19       | 27 114 2 | dark blue    | BLUE        |
| COL05 | 20       | '=' 4    | light blue   | BLUE        |
| COL06 | 21       | 27 114 1 | dark red     | RED         |
| COL07 | 22       |          | cyan         | WHITE       |
| COL08 | 23       | '=' 6    | medium red   | RED         |
| COL09 | 24       | '=' 6    | light red    | RED         |

|       |    |          |              |        |
|-------|----|----------|--------------|--------|
| COL10 | 25 | 27 114 4 | dark yellow  | YELLOW |
| COL11 | 26 | '=' 10   | light yellow | YELLOW |
| COL12 | 27 | '=' 2    | dark green   | GREEN  |
| COL13 | 28 | 27 114 3 | magenta      | VIOLET |
| COL14 | 29 |          | gray         | WHITE  |

### CALCULATING THE ENTER GRAPHICS CODES

The enter graphic codes (ENTG1 - ENTG3R) must be in the printer profile file. They tell the printer to enter graphics mode, and they specify how many bytes of graphic data to expect. These are constant codes and their values are affected by XPRMAX. XPRMAX must be a value around 1024. To be able to fit the entire picture in the printout, your printer must be able to print at least 1024 dots per line. If you can print only 960 or less, the edges of your print-out will be trimmed. In the enter graphic codes, you should put the codes to enter a graphics mode that is approximately 1024. On some printers, like the PROWRITER, 1280 is used, which is fine. Some printers can go to 2000, but it is not recommended, because the printout will be small.

If the closest number to 1024 dots per line your printer can handle is less than 1024, you must use these equations to figure out your codes:

ENTG1:

(number of dots) = XPRMAX

ENTG2:

(number of dots) = INT(512-(((1088-XPRMAX)/8)\*4))

note: 1088 is used to allow a space between the two pictures

ENTG3:

(number of dots) = 256

ENTG1R:

(number of dots) = 768

ENTG2R:

(number of dots) = 384

ENTG3R:

(number of dots) = 192

(number of dots) must then be included in the enter graphic mode sequences, records 6-11 of the printer profile file.

Example: (IBM graphics printer)

| RECORD NUMBER | CODES IN PROFILE | DESCRIPTION        |
|---------------|------------------|--------------------|
| 0             | 960              | XPRMAX             |
| 6             | 27 76 192 3      | ENT1G (960 bytes)  |
| 7             | 27 76 192 1      | ENT2G (448 bytes)  |
| 8             | 27 76 0 1        | ENT3G (256 bytes)  |
| 9             | 27 76 0 3        | ENT1GR (768 bytes) |
| 10            | 27 76 128 1      | ENT2GR (384 bytes) |
| 11            | 27 76 192 0      | ENT3GR (192 bytes) |

Example: (C-ITOH PROWRITER)

| RECORD NUMBER | CODES IN PROFILE | DESCRIPTION        |
|---------------|------------------|--------------------|
| 0             | 1280             | XPRMAX             |
| 256           | 27 80 27 'S1024' | ENT1G (1024 bytes) |
| 267           | 27 80 27 'S0512' | ENT2G (512 bytes)  |
| 278           | 27 80 27 'S0256' | ENT3G (256 bytes)  |
| 289           | 27 80 27 'S0768' | ENT1GR (768 bytes) |
| 2910          | 27 80 27 'S0384' | ENT2GR (384 bytes) |
| 3011          | 27 80 27 'S0192' | ENT3GR (192 bytes) |
| 31            |                  |                    |

#### FILE SETUP - MOVIE FILES

The first byte in a movie file is the border color. The rest of the file is filled with frames. A frame is a set of delta sequences.

Delta sequences mark a quantity of pattern table or color table that has changed from the last frame in the movie. This is initially based on a blank screen; therefore, the initial frame will probably be the largest. This method of just saving changes between frames, rather than saving the entire screen, saves disk space and time. Unfortunately, it means that the last screen in the movie must be built from the start, with each frame complementing the previous frame.

The file type used for movies is DIS/VAR 254. The units used after the first byte are always delta sequences. Delta sequences of address >FFFF and length 0 are used as frame markers.

#### DELTA SEQUENCE:

3 byte header per sequence:

Address in VDP (2 bytes), Length of data (1 byte, 251 max)

The data follows, unless the header is a frame marker.

The address in VDP assumes this BIT MAP mode setup:

Pattern Table >2000      Color Table >0000