The

Video Digitizer

Contents

Section/Page

Warranty

The hardware is warranted for 90 days from the date of purchase. Repairs, alterations, opening of the covers, or abuse of the product voids your warranty. The software on the disks is not copy protected. **Though it is copyrighted which means it may not be given out freely.** To do so is piracy and is a federal crime. When you open this package make a backup disk and use that to run all the demos and programs. C-1581, Hard Drives users and C-1571 users can transfer the files to their disks. You can access partitions using the disk command channel within the Digison and Digifox programs.

Legal Stuff

Support

For voice support call 413-525-0023 Monday through Friday 9am to 5 pm EST.
For fax support call 413-525-0147 Monday through Friday 9am to 5 pm EST.
For on-line support using the GEnie network go to page 625, Category #12. By e-mail contact CMD-DOUG.

Published and distributed by

Creative Micro Designs, Inc.
PO Box 646
East Longmeadow 01028

Edited
by John W. Brown (JBEE on GEnie).

Introduction

Thank you for your purchase of The Video Digitizer (TVD).

The Video Digitizer is a means of capturing images from various types of video sources such as video cameras, Video Cassette Recorders, and Camcorders. Although the Video Digitizer will work with freeze frames on VCRs, it will probably require one of the newer four head VCRs which produce a clear and steady video signal. If you do not have one, try recording the image on tape using SLP mode, which is the longest recording time, and try the freeze frame button using that image. Some VCRs will let you advance the freeze frame by repeatingly pushing the Pause button. Sometimes you can advance the freeze frame far enough to get a steady image for the scanning.

The Video Digitizer consists of one ROM based cartridge which plugs into the User Port and three programs, Digison, Digifox, and Digimulti. Also, TVD comes with three gels to be used for capturing color pictures using Digimulti, which we will cover later on in the manual.

The Video Digitizer (TVD) package contains a full featured paint program (Digison) that can be used by itself or in conjunction with Pagefox, the Desk Top Publishing system. You will find a utility disk formatted under GEOS that contains a utility to allow you to import the Digison and Pagefox images into a GeoPaint format.

The program disk for the Video Digitizer is unprotected so you can make backup copies. Since the program can be run from any type of disk drive with any device number, it is possible to put all your files on a 1581 set as device #9 to take advantage of the increased storage space. The program as been tested with a CMD FD-4000 and CMD HD.

Most keyboard commands require the pushing of two keys at the same time or pressing one key and then immediately pressing another key. The first key to be pressed will be enclosed inside a less than "<" symbol and a greater than ">" symbol followed by the second key to be pressed. An Example:

```
<CONTROL> P   means press the CONTROL key followed by the "P" key.
<C=>      P   means press the Commodore key followed by the "P" key.
```

Since the Digison program can be used with the keyboard, joystick, or a mouse all at the same time the following conventions will be used when explaining what key to press:

Fire will mean pressing either the Joystick fire button or the "fire" button on the mouse.

The "fire" button on the mouse defaults to the right hand button but can be changed to the left hand button by pressing the left hand button of the mouse at the same time you are pressing the RESTORE key. The choice is up to you.

The mouse plugs into the first joystick port and the joystick plugs into the second joystick port. If the cursor does not react to the movement of the mouse or the keyboard then press the restore key and/or both mouse keys.

"**Escape**" or "**menu**" button will mean the button on your mouse that is not the fire button. The default escape button is the left hand button. Joystick and keyboard users will press <Shift> Space.

The menu you see at the bottom of the screen when the program is started is one of three menus which can be brought into view by pressing the escape button (left hand button) on the mouse or by pressing the SHIFT and SPACE keys at the same time if you are using a joystick. To make menu selections you move the cursor directly over the icon you want to activate at the bottom of the screen and then press the fire button on either the mouse or the joystick.

When you make a menu choice the box will invert or reverse so you will know your selection is now made.

ON/OFF

The "on/off" method of drawing and editing is used throughout this program. If the area under the cursor is blank when you press the fire button the drawing mode will be "on" and if the area under the cursor is set (on) when you press the fire button then the cursor will be in erase mode until you release the button. Just remember the drawing mode is set to the opposite of what the area is under the cursor when you first press the fire button and will remain that way until you release the fire button. If you get into the wrong draw/erase mode just press the fire button a second time. This is very handy in ZOOM mode which will be discussed later.

RUBBER BANDS

The term "rubber bands" refers to the ability to stretch a flexible line from one point to another point without affecting the graphic underneath it. This is very useful for placing LINES, RECTANGLES, and CIRCLES in the right places in the correct sizes. It gives you a chance to experiment and to see if certain shapes fit an area before actually laying the object down on top of your current work.

F7/F8 keys

The F7 key is the graphic tab key. It remembers the first point in a line, box, or the center of a circle being drawn. By pressing F7 you move back to the first point set. You can also use F8 to define where a point will start. Move the cursor someplace on the screen, press F8, move the cursor, press F7, and the cursor will jump back to the point you set with F8.

Pattern Information

The basic patterns installed on the third menu consists of 8x8 pixel areas. For better viewing the pattern menu shows them in a 15x16 pixel box. You can create your own patterns and add them to menu #3 with CONTROL <shift P >. This will grab the first twenty 8x8 pixel areas starting from the top left hand corner of your screen.

How to set up The Video Digitizer (TVD)

First, turn off your computer! Never insert or take any cartridge out of your C-64 or C-128 with the computer on! If you do insert or take out cartridges with the computer on you will cause serious and expensive damage to your computer and cartridges. All these instructions are written assuming you are sitting at the keyboard in front of your computer.

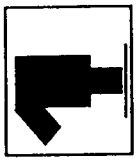
Make sure your mouse is plugged into the first joystick port and your joystick itself is plugged into the second joystick port. Insert the cartridge into the user port (RS232) on the left hand side of your computer.

Skip this step if you do NOT own the Pagefox cartridge. If you own the Pagefox cartridge plug it in now, with the computer off. It goes into the expansion port on the right side of the computer. Turn on the computer and exit the Pagefox menu by clicking on the "down arrow" icon. Then type LOAD"DIGIFOX",8 and then press the "return" key.

Now turn on your computer.

To load and start the software type LOAD"DIGISON",8 and then press the "return" key.

Answer the prompt "Erase" with "y" followed by <return> so the graphic memory is cleared before you start.



SCANNING

To start the scanning routine press "F1" or click on the scan icon.

When using TVD you have to reload the scan routine after using another function due to limited storage capacity within the computer so have the program disk in the drive before starting the scanner routine. Or copy the file "hscn+" to your work disk.

The next screen prompts you for either a grayscale image (dithered) or a B&W capture. Click on either selection now. Your screen will turn blue while the program digitizes the video source. You can stop the scan at any time by pressing the RUN/STOP key.

The cartridge has two adjustments, one for image width and one for contrast. There is no brightness control knob. Brightness control is done through software. The threshold level for determining what pixel will be off (white) or on (black) can be set manually or done automatically by the computer. I could not figure out exactly what the "width" control knob did. All I can guess is that it it has something to do with the width of the video signal and plays no part in how wide the captured image will be. Turned all the way down it hung the computer. The contrast knob is a something you only have to set once for your individual setup and once done it is to be left alone.

Video Camera Setup

CAMERA - $250.00
Panasonic WV-1410, Closed Circuit B&W Video - Security Camera. Available through various mail orders sources and computer dealers. DAMARK and COMB carry such cameras along with various computer mail order sources. Check an issue of any multi-media magazine or Computer Shopper.

CAMERA TRIPOD - Cost $49.99
Radio Shack
Cat# 16-2017 RST-84V

BNC-Phono Adapter (gold plated) - Cost $4.19
Radio Shack
Cat# 278-303a

6 Foot Gold AV/Cable - Cost $5.69
Male RCA to Male RCA
Cat# 15-1519

Make sure you have a well lit and clean place to work. The area needed by the tripod will be 18 inches wide by 29 inches long. I have set my camera and tripod on the left hand side of the computer so I could use a short video cable.

First, take the camera tripod out of the box. Notice the various tags on the knobs which control the camera angles and platform height. Now remove them. We are going to leave the tripod at its lowest height for our work. The hook at the bottom is for storing and hanging the tripod up when it is not in use. Next spread the legs out and push downward until the support arms for the legs lock in place and the center ring is seated down firmly as far as it can go. The level, the piece of glass with a bubble floating in it, should be on the left hand side of the tripod mount. If not, turn the tripod head around.

On the very top of the tripod there is a platform where the camera will be mounted. It is the part with the rubber pad and two metal studs sticking out of it. Remove it by pressing on the lever near the rounded edge, it is spring loaded so you have to hold the lever while lifting up the small platform. Now take your camera out of the box and flip it over.

Lift the C-ring on the underside of the platform pad you removed and screw it into the threaded hole provided on the bottom of the camera. The small stud, the one without the threads, will face towards the front of the camera and is inserted into the hole provided. Firmly with two fingers, tighten the C-ring - screw assembly as tight as you can (if you are a weight lifter use your thumb and baby finger ;) Push the ring down so it is laying flat on top of the screw assembly.

Make sure all the control knobs on the tripod are firmly turned. You are going to put a heavy camera onto it and you do not want it to move or flop around.

Now mount the camera on the platform by placing the mounting pad on the top of the tripod and moving the lever to the side. Once mounted, move the lever under the platform, back into its original position. It will move by itself, it is spring loaded. But, make sure the lever is in place by firmly pressing on the lever, but do not force it.

Now remove the BNC connector and cable from the packages. Place the BNC connector on the camera by lining up the slot and pushing forward, while turning it. Uncoil the cable and plug it into the back of the camera.

Now turn the camera around by loosening the second knob from the near the middle of the tripod. When the camera lens is facing forward, towards the front of the computer, tighten the knob. When turning the camera make sure the cable and power cord do not become entangled or hit a connector port on the back of the computer.

Now angle the camera down until it is in a 90 degree angle towards the desk. The lens will be facing directly at the desk top.

With the electrical power and computer off, plug The Video Digitizer cartridge into the User port on the left hand side your your computer. Now plug the other free end of the RCA cable attached to the camera into the Video Digitizer cartridge (V.D.C.). Since the cartridge does not sit level on the desk, you might want to plug the cable into the Video Digitizer before inserting it into the computer. This might save some wear and tear on the Video Digitizer and your User port. C-128D owners might have a tough time doing this since the RCA plug is almost directly underneath the C-128D power cord. Now turn the computer system on and enter C-64 mode. Now turn the camera and your light source on. I used a small table lamp to provide indirect lighting, you could also use a light table.

DIGIMULTI

DigiMulti is an unique and useful program and one of the best reasons to buy The Video Digitizer. It allows you to have various levels of gray scale captures or full color separation when doing scans. The program produces color scans by capturing three color bitmaps red, green, blue, and then merging them together for the final color picture.

To load and start the software type LOAD"digimulti",8 and then press the "return" key. After the program is running you will be presented with a screen:

```
F1:Load
F3:Display
F5:Digitize
F7:Save
F8:Reset
```

The "F" before the numbers above stands for "function" key. The "F"unction keys are located at the top right hand side of your keyboard. To pick a menu selection, just press the function key that corresponds to it.

The SPACE key returns you to this main menu.

F1:Load

You use this key to load previously saved graphics into your current viewing area. The images to be loaded can be from this program, Digison, Handyscanner, or Pagefox. Images 640x400 pixels will automatically load into the whole of the graphic memory. 320x200 pixel images will load into screen one.

To load an image into another quadrant, use the F3 key to view the current graphic memory. Then hit keys 1,2,3, or 4 to move into the 320x200 pixel quadrant you want the image to load into. Then press the space bar to exit back to the main menu. Now press the F1 key to load your image.

F3:Display

Pressing this key will allow you to view any of the four 320x200 pixel quadrants. This key when used in conjunction with F5 allows you to combine screens 1-3 into one multi-color picture which will be shown in quadrant four. This is used after you have scanned in the red, green, and blue color separations. First, press F3, when the graphic memory is shown, press key 4. Now press the space bar which will bring you back to the main menu. Now press F5:Digitize. Screen four will be shown as screens 1-3 are combined to make a multi-color picture, neat!

F5:Digitize

This is the key that performs the video scanning. When your display is set to screen four it will combine screens 1-3 into screen four for a multi-color display. To make B&W scans or color separated scans you must use F3 to set to screens 1, 2, or 3. Do that now.

First set to screen one, which is one of the four 320x200 pixel areas. Now press F5. You will be asked if you want to use 4, 7, or 13 grey values. The best results are usually with 13 grey values, though it differs depending upon the video picture.

Hold the red gel in front of the camera lens and start the scan which takes about four seconds.

Now, set to the second screen holding the green gel in front of the lens and start the scan again.

Now, set to the third screen holding the blue gel in front of the lens and start the scan again.

Once all three color scans are done, you move to the fourth screen, hit the scan key, and the software combines all three color scans into one color picture.

The color picture can then be saved to disk in many of the popular drawing program formats such as Koala and OCP Art Studio where you can further edit the graphic. You can also save the whole graphic area to disk and edit it in Digison. The graphic bitmaps convert fine to GEOS using the Handy Import program.

F7:Save

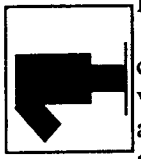
By pressing this key, you can save a single screen, which is the last screen you viewed, or all the screens in the graphic area as one file for later use. These graphic formats are supported, for a multi-color image you would usually set to screen four that contains the final color image and then hit the save key. The first two choices are compatible with Handyscanner 64 and the Handy Import program for GEOS.

Single Screen(compressed)
Graphic Memory (all screens)

Hi-Eddi
Cheese
Koala Paint
Paint Magic
Blazing Paddles
Vidcom
Art Studio
Doodle

F8:Reset

This key resets the computer and exits to BASIC.



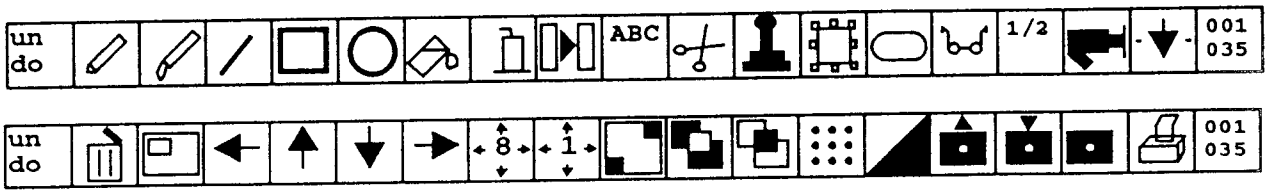
DIGISON

Digison is the part of the package that produces the Black and White capture of images and converts well to other formats that use either HiRes mode such as Doodle and FGM. It also converts well to geoPaint. This is strictly a B&W paint program, though the work area is a big 640x400 pixel area. Using the program "Digifox" provided on the disk, the work area is 640x800 pixels with the addition of the Pagefox Desk Top Publishing cartridge. There are also some enhancements to the Pagefox software when using Digifox, such as being able to draw lines and circles wider than the screen and having the 24 pin drivers resident.

DIGITIZING

The Video Digitizer offers three types of Black and White digitizing. A simple B&W capture mode and two gray scale modes. Each digital capture lasts about eight seconds and has to be a picture of an unmoving object or has to be a steady unchanging video signal. The resulting scan is about 400*230 pixels and the image is placed starting in the middle of the first 320x200 pixel screen. I found this kind of irksome at times because it makes aligning multiple images a bit tough when you want to piece together a very wide picture.

With the gray scale - dithering modes you can choose two dithering settings, either 7 levels or 13 levels of gray scale dithering. In each you can set the threshold mark where white or black will be determined. If you do not answer the prompt for the threshold setting it will be performed automatically by the software, which usually gives superior results.



un
do **UNDO** the last action

Position the cursor over the UNDO icon and press fire. Everything will come back the way it was before you changed it! For most of the drawing and editing commands UNDO will bring your work back the way it was before the last action. If you had drawn a line and then drew a circle, clicking on UNDO would bring back the way the screen looked after you had drawn the line and before you drew the circle. UNDO works with the freehand drawing, sprite, and spray commands back to the last input. For all the other drawing mode commands UNDO buffers only the last drawing action, UNDOing something after multiple uses of the same tool, such as the circle command, will only bring back the last action. If you want to limit how far back UNDO will go and still use the same tool, click on another icon, click again on the icon you were using and you will be all set. UNDO will only go as far back as when you switched icons.

Clicking on UNDO a second time again will put the screen back to how it was before you clicked on UNDO. So you can UNDO an UNDO. That effect is the same as if you never clicked on UNDO in the first place. This is handy when you want to see how something fits before and after a certain action. This is especially convenient when you are filling an area with different patterns. It gives you a chance to experiment with a wide range of options.

SMALL Freehand Drawing

Click (press fire) over the icon for SMALL FREEHAND DRAWING, this is the pencil icon in the second box on the first menu. Now move the cursor over into the blank area of the screen, press the fire button, hold it down, and start moving the mouse/joystick. Now you are drawing a freehand line! By pressing the fire button in this way you can set (draw) either individual pixels (dots) or you can draw lines of any shape by holding down the fire button while you move the cursor. If you want to make smooth lines without any breaks in them move the cursor in a slow and steady manner while holding down the fire button.

How to erase - Using the cursor in SMALL FREEHAND DRAWING mode try to set (draw) a point over one you just drew by placing the cursor over a drawn line and pressing fire. The line disappears! Now keep the fire button down and move the cursor over the screen crossing several lines. You are in erase mode until you let go of the button.

BIG (heavier) freehand Drawing - Click over the icon for BIG FREEHAND DRAWING to make heavier lines while drawing in freehand mode.

LINES

Press key number one and then click on the ERASE icon so you have a clean slate on which to try the next command. Now click on the LINE icon on the first menu. Move the pointer to the top left corner of the cleared drawing screen until the DISPLAY of COORDINATES reads 0,0.

Press the fire button once, this will set the first point of your line. Now move the cursor down towards the right hand corner at a slight angle. You will now see a line being drawn between the first point you just set and your cursor. You are now "rubber banding". Now try moving the cursor all around the screen.

See how the line follows the cursor? This "rubber band" shows you where your line will be draw once you press the fire button again for the second time. Do so now. Your line is drawn and you are also out of rubber band mode and can move about the screen freely to set another point. If you do not move the cursor after setting your second point and you press the fire button again you will be in rubber band again. You can keep making lines in this manner to make shapes of any size. If you want to get rid of the rubber banding do not click the fire button again after setting your second point on a line.

You can also draw rays, they can look like spokes on covered wagon wheels, by setting the first point with the LINE command, drawing your line, setting your second point, and then pressing the F7 key. This allows you to set your first point for another line at exactly the place where you started the previous one. You can also make pie charts in this manner by drawing a "ray" inside a circle.

RECTANGLES

First, erase the screen, then click on the RECTANGLES icon. Bring your cursor into the middle of the screen. Click the fire button once, drag your cursor down and to the right, and you will see a "rubber band" box start to grow. Click the fire button a second time and you will now have drawn a rectangular box on the screen.

CIRCLES

First erase the screen. Then click on the CIRCLE icon. Put the cursor in the middle of the screen and press fire. Now start to move the cursor away from your first set point and you will see a "rubber band" image of a circle. Once you have pulled it almost to the edge of the screen, stop and click the fire button a second time to set your second point. The rubber band will be replaced by a circle. Now press the F7 key and you will be brought back to where you started your first circle. Press fire again and start your new circle, rubber band it within 1/4 inch of the outer circle, press fire again to finish drawing your second circle. Keep hitting F7 to go back to the center of your first circle until you have drawn a multi-ring bull's-eye!

Drawing round circles with the Display of Coordinates

Suppose your circles look more like eggs than perfect circles? Before starting your first circle move to the center of the screen. Now press the "K" key which will make the drawing mode millimeter based instead of pixel based. Now press key "0" and the display of coordinates will read zero on the top (x axis) and zero on the bottom (y axis).

Press fire to set the center of your circle. As you rubber band your circle outward be sure to keep an eye on the display coordinates. When you set your second point for the circle make sure the top and bottom numbers (x and y axis) are both the same number. This will help you to draw a circle that will appear round when printed out on paper. Now press F7 again to begin at the center of your first circle and start drawing another circle until you have a perfectly round bull's-eye. When you are finished drawing your circles remember to press the "K" key again so you are back drawing with the pixel coordinates. The radius, a straight line from the center of your circle to the outside edge, is limited to 255 points. The use of the metric display of coordinates, for printouts (hard copy), is meant to be used with Epson (or compatibles) 9 and 24 pin printers.

FILL icon - The filling of areas.

Do not erase your bull's-eye yet. You are going to fill it with patterns! Click on the FILL icon. This is the icon that looks like a beaker with paint spilling out. After clicking on the FILL icon put your cursor between the first and second outer most rings of the bull's-eye. Now click the fire button and the area will be painted (filled) in with a solid black pattern. Now press the escape button or SHIFT/SPACE until you come to menu number 3, the PATTERN menu. Now click on the fourth box (a pattern of horizontal lines) in from the left hand side. Your solid outer ring just became an outer ring of horizontal lines. Click on the fifth box (a pattern of vertical lines) and your outer ring is now a ring of boxes. What you have done is overlay one pattern on top of another. If you do not like the results you can always click on the UNDO box and try a different set of patterns once you fill the circle.

The FILL command can also be used to erase an area and fill it with a pattern. It works just like the free hand drawing mode. What is on is turned off and what is off is turned on. Fill in the middle of your bull's-eye with a solid black pattern, now skip a ring and fill the next ring with solid black too. Now go to the center circle which you filled with black and click on it and the black will be erased. Now, click on the ninth pattern in from the left hand side (big diagonal lines). The empty space where the black center was is now filled with lines. But, look, the border of the circle is gone! Fill in the second ring from the center. Everything fills in solid black and your center is gone! But do not worry, click on the fourth pattern in from the left hand side (the horizontal lines) and you will see you now have a crisscrossed center with a second ring of horizontal lines. This is the way to mix patterns to eliminate borders between objects and still be able to tell them apart. This is a great way for filling in digitized pictures and shading them.

You can also use this function to FILL areas on pie charts. This is done by drawing a CIRCLE, next drawing RAYS from the circle's center with LINES and the F7 key, then using the FILL command to make each slice a different texture. You can also use the RECTANGLE command to make bar charts and use the FILL command to show different levels.

SPRAY CAN

Click on the SPRAY CAN icon. Move the cursor onto the screen and press the fire button. If you press the fire button longer or move the cursor slower the spray pattern will get denser. If you fill in an area too heavily press the SHIFT key and then the FIRE button while over the area and the spray pattern will be gradually erased.

MOVE

The MOVE command is one of the most powerful commands of the software. It lets you pick up pieces of the screen, do graphic manipulations on the pieces, and then set them down somewhere else. This is a great tool to use when joining scanned graphics, for adding special effects, and for making mirror copies of an image. The benefit of making mirror copies of an image is that you only have to scan in one half or draw one half of an object that is symmetrical and then flip it around to create a mirror copy of the other half.

Let us clean the slate and start with a cleared screen memory. Click on the ERASE (trash barrel) icon twice.

Move and the OR connection

Now click on the "OR-CONNECTION" icon on the second menu, this is an extra step and not needed but is being done in case you have already been using the prpgram before we started these instructions. Click on the LOAD icon and load in a graphic file (ending in ".gb"). Once it is loaded into memory press the "1" key and then press the "1/2" icon to reduce the drawing by 50%. Now click on the MOVE icon. Now go to the top left hand side of the graphic and press fire. Now move the cursor down towards the bottom right hand side of the graphic. As you move the cursor you will see a "rubber band" box move along with you. This is the area that will be MOVEd once you set the second point. Once you have the "rubber band" box centered around the section of the graphic press fire. After the second pressing of the fire button the screen will be erased for a short period of time. Briefly that part of the graphic will appear and then the whole viewing screen will be redrawn again. What has now happened is you have made a copy of that section and it is sitting directly above the original. To see the copy click on one of the MOVE icons (the arrows). Now, instead of the screen scrolling, a copy of the graphic section is instead! The copy is moving 8 pixels at a time, if you only want to move it one pixel at a time click on the "Move 1 point" icon. The advantage of moving only one pixel at a time is when you want to place the copy precisely on the screen or when you are matching up sections of an object.

If you scroll the copy far enough to the border of your current viewing screen the scrolling will stop.

But suppose you want to move a copy of the graphic someplace else? That is not a problem. Just press any number key 1-4 (or 1-8 for Pagefox users) and the copy will follow along with you. Suppose where you want to place the graphic is exactly between two quadrants? That is not problem either. Click on the "full page/preview" function and place the flashing box over the area you want to be in. Once you have the copy of the graphic where you want it, press the fire button, and it will be placed onto the screen. If you make a mistake placing it or decide it does not look good, click on the UNDO icon. To continue press on the UNDO icon and then press the "1" key.

MIRROR

Now we will be getting into the unique features of the program: the mirror functions of the program. Depending on where you start the "rubber band" box and where you set the second point of the cursor you can perform all kinds of mirror and copy functions.

Click on the MOVE icon again, but this time click on the upper right hand side of the graphic, move the rubber band box down and to the left. Now click on the lower left hand side of the graphic. Now as the "copy" is being redrawn you will see that it is facing left instead of right. Now the screen is redrawn again and you see your "mirror" copy of the graphic facing right. You can move this "copy" around the graphic memory just like you did the other one! Where you set the first point and where you set the second point determines how the "copy" is mirrored or rotated. This function also works with the OR, EXOR, and AND commands.

There is a puzzle on the program disk that was made using the MOVE function. It is called "puzzle.bs". Load it into memory and try using the MOVE function to repiece it together properly and make the graphic whole again!

Resizing a graphic

Follow the same procedures as when you are using the MOVE command, but, when you press the fire button to set the second point of the "rubber band" box do not release the fire button. Now make the rubber band box smaller or larger by moving the cursor and then release the fire button. When the MOVE graphic is redrawn it will be redrawn to the size of the rubber band box. This is a good way to scale a graphic up or down, or to make it narrow or wide so you can fit the graphic within a column, box, or certain area of the screen.

Hints on sizing graphics

When reducing or enlarging a graphic you will notice a diagonal line running from one corner to the opposite corner. You can use this line and the display of coordinates to help you reduce or enlarge a graphic to scale.

OR, EXOR, AND

When placing graphics on the screen with either the MOVE or LOAD command these three commands OR, EXOR, and AND determine how the graphic will look when placed on the screen. It allows you to place graphics in front of, or behind, or merged with other graphics on the screen.

OR

When the OR command is selected if either the background (the screen you are viewing) "OR" the foreground (the MOVE graphic or the graphic you are loading into the computer) has any pixels set or turned on when you are placing the graphic on the screen, both the background and foreground pixels will remain on or set. The effect is that the graphic being placed on the screen will not turn off pixels that are already on.

EXOR

The EXOR command is an abbreviation for the term "EXclusive OR" which means pixels are turned on when either the background OR foreground graphic have a pixel turned on and a pixel is never turned on when there is no point turned on in either the foreground or background. If both the background and foreground have a pixel turned on in the same spot then both the pixels in the foreground and background get turned off.

AND

The AND command will turn on a pixel only when it is set in both the foreground "AND" background graphic.

To try these features out erase the screen and draw two (filled) circles next to each other, one small circle and one large one circle. Now using the MOVE command make a copy of the smaller circle. Without moving the circle see the effect by clicking on the OR command (the circle is still there), the EXOR command (the circle disappears). Now click on the AND command. Everything disappears? No, the MOVE graphic is over the original graphic where the foreground AND background pixels are on. Move the MOVE graphic with the arrow icons. See how the circle is being turned off as it moves across other pixels that are turned off?

Another neat feature is you can use the pattern function in conjunction with the MOVE command and with the OR, EXOR, AND commands. Try drawing a circle, click on the OR, EXOR, or AND command, then move the circle, then click on a pattern from the PATTERN menu. You will notice the circles take on patterns according to whether the OR, EXOR, or AND command is chosen. This can add a really nice effect to a scanned in graphic after you MOVE it and leave a "patterned" shadow behind it.

INVERT

The invert function is very simple. When you click on the Invert icon every pixel on the screen that is "on" is turned off and every pixel that is turned off is turned on.

GRID

By clicking on the grid icon you place a grid or series of horizontal and vertical lines over the graphic that are spaced on 8x8 pixel centers. These lines do not effect the graphic but simply act as reference points when drawing. With the "Display of Coordinates" available I find this command more annoying then helpful so I usually leave it off.

Brush Functions

Scissors - Brush Cut or Get
Append - Brush Append
Stamp - Brush Stamp
Erase - Brush Erase

SCISSORS

The Scissors icon lets you create a "brush" to use on the graphic screen that measures 24 x 21 pixels. First draw a very small circle that is less than 24 x 21 pixels then click on the Scissors icon. As you move the cursor into the graphic area you will see a small box. When you place this small box over a graphic and press fire it will place a copy of whatever is within that small 24x21 pixel area into your "brush". Place the small box over the circle you have drawn and press fire. Now you are automatically placed in "Append" mode. Now you can place the "brush" anywhere on the screen by pressing fire.

Append a Brush

While pressing fire move the cursor around the screen. You will see the "brush" looks like it is overlaid or appended to itself as you move.

Stamp a brush

Now click on the stamp icon. While pressing fire move the cursor around the screen. It looks like the "brush" is overwriting itself and anything underneath like a rubber "stamp" when it is stamped repeatedly over something. By using the Scissors, Append, and Stamp icons you can create interesting effects while drawing, that are completely different than when using a straight line. To add even more effects try clicking on the pattern icons after drawing something with the Append or Stamp icons!

ERASE

This is the erase or "sponge" icon. It is shaped like a sponge because it soaks up all the pixels you place it over, it erases them. Click on the Erase icon and move the cursor into the graphic area. As you do so, you will see a small box. While you are pressing fire everything underneath this box will be erased. This is very handy and quicker than erasing an area pixel by pixel with the other editing tools. You can also use Erase to eliminate large sections at a time from around a scanned graphic.

Zoom and the Brush Editor

Zoom has two functions. One, to act as a brush editor after using the Scissors, Append, Stamp, or Erase icons and two to act as a pixel level editor on the graphic screen.

After using any of the Brush icons you can click on the Zoom icon. Now the "brush" is magnified eight times. This lets you edit the brush so it looks exactly the way you want when you are drawing or erasing on the graphic screen. This helps you eliminate any unwanted pixels you may have picked up in your brush or add pixels you may want in your brush.

Zoom also allows you to edit the graphic screen after using any of the icons from the small pencil icon (small freehand drawing) to the ABC (text) icon. As you move the cursor into the graphic area you will see a small box. Under this box is the area that you will be able to edit once you press fire. Place this box over the area you want to edit and press fire. A box will be drawn with ICONS underneath it and over to the side you

will see the graphic area you are editing surrounded by a flashing box. As you make changes in the big box you will see them made on the graphic to the side of the big box.

There are 7 icons active within the Zoom editor that work the same way with both the brush editor and pixel editor. Starting from the left there are these icons:

Exit icon - use this to leave the zoom mode. You can also press the escape button on the mouse.

Mirror 180 - this will turn the area you are editing 180 degrees left to right.

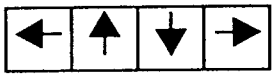
Rotate 180 - this will rotate the graphic 180 degrees left to right.

Rotate 90 - this will turn the area you are editing 90 degrees with the loss of 3 pixels on the right hand side because the brush is not 24 pixels long.

Invert - this works the same as the Invert icon.

Trashcan - erase the Zoom editing area.

Display of Coordinates - This measures your cursor movements starting from the top left hand corner within the Zoom editor.



ARROWS

You use the left, right, up, and down icons on the second menu to scroll the visible screen gradually in any direction.

Exit/Quit

This is the down arrow on the first menu. By clicking on this icon you are put back into Basic mode. If you click on this icon by mistake just restart the program again and answer "no" when asked if the graphic area should be cleared.

1/2 ICON

This will shrink the currently viewed screen by one half.

Display of Coordinates

This shows you the current position of the cursor or pointer when performing graphic functions. It also changes when you switch graphic quadrants by pressing the 1,2,3, or 4 keys. Or keys 1-8 if you are using a Pagefox cartridge. This also works in the Zoom editor.

Trashcan Icon

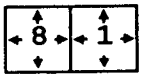
To erase the current viewing screen press the escape key or the SHIFT/SPACE keyboard combination to change menus and click the cursor over the ERASE (trash barrel) icon. Which will erase the current viewing screen. To erase all of the viewing /graphic screens at once you click the cursor over the ERASE (trash barrel) icon, wait a second and click the cursor over the ERASE (trash barrel) icon again. There is no way to undo this last command so be very careful when clicking on the ERASE icon.

FULL PAGE SURVEY

This program uses four graphic screens, each measures 320 horizontal pixels by 200 vertical pixels and are linked together to form a virtual bitmap of 640x400 pixels. You can access each individual screen by pressing keys 1-4.

Screen/Key 01
001-320 h
001-200 v
Screen/Key 02
320-640 h
001-200 v
Screen/Key 03
001-320 h
200-400 v
Screen/Key 04
320-640 h
200-400 v

This is one of the most useful functions as it gives you a full page view of your graphic. Click on the icon and you will see the whole graphic area of 640x400 pixels reduced onto a viewable 320x200 image without destroying the graphic itself. There is a flashing box with a corner at the top left and a corner at the lower right flashing. This box area is 320x200 pixels wide and can be moved,with your mouse or joystick, to any place on the screen so you can edit your work. When you press fire you will be dropped into the virtual bit map that is between the two flashing corners.



MOVE icons

When you click on these icons, the image with which you are working is moved in either 8 pixel or 1 pixel increments. The procedure is to use the MOVE command to grab a section of the screen, then use the bigger arrows (left, right, up, and down) to move the graphic to another area, and then click on the "1" icon to move it in smaller one pixel increments to fine tune the placement of the graphic.

TEXT Icon

The placing of text on a graphic screen is accomplished with this tool. Click on the TEXT icon; it is the icon marked "ABC". Move the cursor to the graphic area and type a message on the keyboard. Move the cursor and you will see the text follows it around as if it were on a "rubber band". The text can be placed any place on the screen. You can also modify the way the text looks with a number of keyboard commands. To reverse the effect of the commands listed below just issue the keyboard command again. You can combine many of the keyboard commands to perform more than one change to the text at one time.

<CONTROL> E	make the text into a bold face font
<CONTROL> H	double the height of the font
<CONTROL> B	double the width of the font
INST/DEL	delete the last letter typed
CRSR UP/DOWN	move the text so it is written up or down the screen by using the up/down cursor keys in conjunction with the shift key
CRSR LEFT/RIGHT	move the text so it is facing left or right on the screen by using the left/right cursor key in conjunction with the shift key.

The program can load in different fonts other than the standard one supplied within the paint program. The fonts provided on the disk are: ZS1, ZS2, ZS3, ZS4, ZS5, ZS6, ZS10, ZS11, ZS16, ZS20, ZS30, ZS40, ZS60.

Every time you load a new font it over writes the one that was loaded into memory before it. To load a font, click on the LOAD icon and move the cursor under the font (example: "ZS20"). Press fire and when you are prompted "Load Merge" just click on LOAD. Now go back and click on the TEXT icon and try writing a new message on the screen. You will see how the text is now a different font that is much larger and bolder.

LOAD

Put the program disk or a data disk with pictures on it into the disk drive and click on the LOAD command. This is the icon with a picture of a floppy disk with an arrow pointing up. This symbol means you are picking the pictures up from the disk and putting them into the computer. This is called LOADING. Once you click on the LOAD icon the screen will change and you will see a directory listing of the disk files on your program disk. Cursor down to a file ending in ".bs" by using either the mouse, joystick, or keyboard. Once the underline cursor is under the file name press the fire button or the return key. Now you will be prompted with "Load or Merge". LOAD will overwrite whatever was in your current viewing area, which was set using keys 1-4 or the Full Page Survey Icon. MERGE will combine whatever was in your current viewing area with what was on the disk, which was set using keys 1-4 or the Full Page Survey Icon.

SAVE

After creating your masterpiece you want to save it to disk for future editing or printing. Be sure to have a disk in your disk drive that has a lot of room on it, using a newly formatted disk is best. Now, click on the SAVE icon (the one with a floppy disk and a down arrow) because you are going to put the graphic DOWN on the floppy disk for future recall. You will now be presented with two new icons. The first one is a black box. This means save the whole 640x400 pixel area to disk. The second one is a small black box within a larger box. This one will save the current screen you are viewing which is equal to a 320x200 pixel area in the graphic memory. Click on one of the box icons.

Now you will be prompted for the file name. This can be up to sixteen characters. Because you can save and also load a graphic which can take up the complete graphic memory it is a good idea to use some sort of code in the file name so you can distinguish between small screens and large screens. This will prevent you from accidentally overwriting a graphic already in memory when you only want to load another smaller graphic into memory. The recommended way to name files is to only use file names with a maximum length of 13 characters and type in the last three letters with either a ".bs" for a small file or a ".gb" for a big file. The choice is up to you.

Disk Commands

These commands are to be typed in from the prompt after clicking on the disk icon. Before issuing some of these commands, make sure you have a backup of your data on another disk!

9 Switch to drive number nine.

/0:name Switch to a partition on a 1581 where "name" is the name of the partition.

cp### Switch to a partition on a CMD HD where "###" is the number of the partition.

N0:name,id ***Format a disk, "N"=new, "0"=drive number, "name"=diskname, "id"=two digit disk id. When you issue this command you are formatting the disk and will lose ALL the information that is on the disk.***

N0:name ***Functions the same as the above command but erases just the disk directory. This can only be used on disks that have been formatted already. After issuing this command all the data on the disk is lost. The advantage is that this "newing" of the disk is much faster than a complete format of a disk.***

V Validate the disk after a splat file or disk error. You are better off making a back up copy of the disk and performing the validate on the copy.

I Initialize - reset disk drive. This is useful if your disk drive freezes up or to make sure the disk

BAM and directory has been read properly into the disk drive memory. It is also a quick way to exit a current partition on a C-1581 disk drive back to the root directory.

R0:newname=oldname

"Newname"=the new name you are giving a disk file. "Oldname"=the old name you are discarding.

Disk errors

If you are loading a picture, font, or other file and you get a "file type" question or other error it means you tried to load a file into the computer it was not expecting or one that was too large for its memory. This can happen when trying to load a graphic file into font memory, a pattern file into graphic memory, or loading a Pagefox file into memory. When this happens just press fire or the RUN/STOP key and you will be returned to the graphic editor. It might be wise to reset the drive with the "i" command after this happens.

PRINTING

This program works with Commodore printers, 9 pin Epson compatible printers, and 24 pin Epson compatible printers. To set up the program for your printer run the "printsetup" program on your disk.

The printer routine "hscn" is loaded into memory when you go to print a picture. If the program can't find the printer driver on your default disk drive it will ask you to insert the disk with the driver. To make things easier you can copy the file "hscn" to your work disk so you do not have to keep swapping diskettes. The pattern function and text character sets occupy the same memory location inside the computer as the printer driver. So when you use any one of these three functions it will overwrite the one currently there.

When you click on the printer icon a menu will pop up with six choices. To pick your selections just move the cursor up, down, left, or right over your selection and press fire.

You will then be presented with six inputs:

1) The type of printer and print quality
2) Autoline Feed
3) Which screens to print
4) Centering of the graphic
5) Paper Length
6) Number of copies

Input Number One: Low Medium High Shinwa MPS

The Low setting prints only 640 dots per line but it is the quickest way of printing.

The Medium setting prints 1920 dots per line which gives a better quality print out than the low setting but is also slower.

The High setting gives you the best print out because each line is 1920 dots wide. This gives each print out a density of 1920 x 1600. The quality of the printout is excellent in this mode, but it does take a while to print, it uses up your ribbon faster, and can overheat your printer if you print too many pictures in a row.

Owners of twenty-four pin printers will not notice a difference in the speed between the different quality printouts. Because the Handyscan program uses "interpolation" on the high settings to fill in the spaces in between the dots they may produce a very dark printout on gray scale images. In this case the lower quality printouts may be desirable.

If you are producing a newsletter of many pages my suggestion is to do all your test pictures in the low setting to take advantage of the faster speed and to lessen the wear and tear on your printer and ribbon. Once you have your final draft of the page then print the pages on the high quality setting. If you need multiple

copies of each page you should bring the pages to a copy shop or printer to have them photocopy the pages for you.

Input Number Two: Auto-Linefeed Linefeed

Most people will need to click on Auto-Linefeed if they are using Epson compatible printers. If the printout has spaces between each pass of the printout you should click on Auto-linefeed. If the graphic prints entirely on one line without advancing the paper then click on linefeed.

Input Number Three: All screens One Screen

You can print either all four screens or just the 320x200 pixel screen you were viewing.

Input Number Four: Left Center Right

This input is only valid if you decide to print one screen. With the printing of less than the full graphic memory you can decide where on the printed page you want the graphic placed.

Input Number Five: Standard Paperlength

This input allows you to set the length of the printout. Usually you would just click on default, but when printing on paper or labels that are not a standard size the other option is important. This is how to calculate the length of your printout: type in the number of lines you can fit onto the paper or label using a word processor and normal text. This is usually a number between six and nine. If you own a printer that lets you set the paper length from a front mounted switch or LED on your printer (such as a Panasonic) then set the printer to the paper length and select the default "standard".

Input Number Six: Single Multiple

This option is for selecting how many times you want to print the graphic out on your printer. Usually you will only print out a graphic once. If you have to make many copies of a graphic it is best to take the printout to a photocopying service.

You can stop the printing process by pressing RUN/STOP. You will then be presented with the choice "Continue Abort". Just cursor over the choice you want and press fire.

Printing with the Pagefox or Handyfox

When you click on the printer icon the Survey function will be drawn. You can print out smaller pieces of your graphic or the whole graphic at once depending on where you start and end your input with the cursor. Cursor to the top left hand corner of where you want the printout to start and press fire. As you move the cursor you will see a rubber band box being drawn. Now, cursor down to the bottom right hand corner of the graphic

you want printed out and depress fire. Now you will see a menu with a choice of five inputs. To pick your selections just move the cursor up, down, left, or right over your selection on the line and press fire.

The five inputs are:

1) The type of printer and print quality
   same options as before
2) Autoline Feed
   same options as before
3) Centering of the graphic
   same options as before
5) Paper Length
   same options as before
6) Number of copies
   same option as before

Setting up your printer

From Basic type LOAD"PRINTSETUP",8 and then press RETURN. Once the program has loaded into the computer type RUN and then press RETURN. Most people will just have to press return after each prompt from within the setup program and just use the default printer codes. If you have a problem using the default setup then you can modify them by using the printer escape codes found in your printer manual. After you have answered all the questions a file called "pdata" will be saved to your disk. Make sure your disk is not write protected at this time. The revised parameter file "pdata" will now be loaded automatically into the computer when you run the main program.

Epson compatible printers are printers that use the Epson escape codes to print text and graphics. These printers include the Epsons, Stars, Panasonics, Citizens, Fujitsu printers, and others. These printers can use the Low Medium and High settings. Partly Epson compatible printers such as the Star NL-10, other printers with Commodore modules, and the MPS-1000 can only use the Medium setting.

Shinwa printers are the Shinwa, BMC BX-80, Mannesmann MT-80, and Commodore MPS-802 with the Graphic ROM II.

MPS printers are the MPS 801 and MPS 803 printers. Since these printers only print 480 dots per line you can not print a graphic wider than 480 pixels.

Working with GEOS

With this package you will find a disk formatted under GEOS. On this disk is a program called Handy Import. Make a copy of this disk and work from the copy. You can make a copy with a whole disk copier or by formatting a disk under GEOS and copying Handy Import to the newly formatted disk.

Single 1541 drive owners

Scan an image and then take the newly formatted GEOS disk and put it in your disk drive. Now save the scanned picture to the newly formatted GEOS disk that contains the Handy Import program. This will save you a tedious copy session under GEOS when converting the graphic to geoPaint.

Converting the scanned graphics to a geoPaint picture

Boot GEOS, insert the disk with the GEOS work disk that contains the scanned graphics. Click on the disk icon. The Handy Import program will be the first application on your disk. Click on the icon and just follow the prompts.

Additional Notes for single C-1541 GEOS users

Converting any type of graphic under GEOS will give your disk drive a real workout. The Handy Import program will work the fastest using a Ramdisk (1541/1571/1581) or a RamLink emulation partition for the reading and writing of the graphic files. If you are working with two (non ram) drives it is better to read the graphics from the smaller disk drive (1541) and save the graphic to the larger disk drive (example: a C-1571) to avoid running out of disk space.

Single C-1541 owners will be able to convert only about four full page (640x800 pixel screens) graphics into a geoPaint pictures at one time using a single 1541 disk drive before running out of disk space.

If you are going to scratch files and validate a disk formatted under GEOS make sure you only do so under GEOS and not from within the Handyscanner or Pagefox program!

Please note that GEOS only supports a 640x720 pixel picture, the Pagefox supports a 640x800 pixel area. When you convert a Pagefox graphic to GEOS you will lose the bottom 80 pixels. Take this into account when scanning graphics.

Digison/Pagefox/commands

F1/F2	start scan/construction set
F3/F4	screen and background colors
F5/F6	file and plane
F7/F8	graphic tabulator search/set
H/V	tabulator horizontal/vertical
0	set new point for display of coordinates
keys 1-8	move to one of the screens numbered 1 - 8
<Run/Stop>	exit from any command
<Restore>	plus the left mouse button switches the fire and escape buttons around
<Shift> P	overtake pattern
<Shift> Q	leave Handyfox
<Shift> <Restore>	take a snapshot of the screen
Sys 3488	restart Pagefox from Basic

There are various tools to balance the colors or to change the colors globally within the scanned picture. This is helpful if you want to change all the reds to blacks, all the blues to greens, etc. You can eliminate colors in the picture by changing it to an existing color, such as black, or "blend" a feature into the background by using the background's color.