GRAPHIXPAINTER

ADAM GRAPHICS UTILITIES FOR DOT MATRIX PRINTERS

BY WAYNE MOTEL

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*** WARRANTY NOTICE ***

The enclosed program is warrantied for any defects that would cause it to be unusable for a period of 90 days after purchase. NOTE: The enclosed program is designed to operate using REVISION 79 of SMARTBasic 1.0 and REVISION 80 of the ADAM memory console. If you do not have these current revisions, the program will not operate correctly.
To determine the revision of SMARTBasic you have, load SMARTBasic; the words "Coleco SMARTBasic 1.0" will appear at the top of the screen. Type the following: PRINT PEEK (260) at the ready prompt and the number "79" should be displayed.
To determine the revision of the ADAM console you have simultaneously hold down the CONTROL and R keys while in the Electronic Typewriter mode. "80" should be displayed below the roman numeral IV at the bottom of the screen.
The enclosed software will ONLY operate with parallel dot matrix printers attached to the ADAM via either the EVE SP-1, EVE SP-1P and Orphanware PIA2 parallel printer interfaces.
The enclosed Product Registration Card with a valid serial number must be sent in to validate the warranty.

** PRODUCT UPDATES **

Updates to the enclosed program and associated documentation will be made from time to time to provide additional minor improvements and corrections. Notification of the availability of these updates will be made based on the receipt of a valid Product Registration Card. Their will be a nominal charge for providing the updates.

TABLE OF CONTENTS

SECTION I   GETTING STARTED

A. PRODUCT OVERVIEW

GRAPHIXPAINTER is a graphics print utility for parallel dot
matrix printers which allows printing of ADAM SMARTBasic
graphics screens, both Low resolution and High Resolution.
Additional utilities are provided for saving and loading
graphics files/pictures and for converting Run Length
Encoded (RLE) digitized pictures to ADAM SMARTBasic high
resolution graphics screens. A printer driver is also
included which will allow you to generate graphics commands
directly to your printer.

B. SYSTEM REQUIREMENTS

. ADAM system with either tape or disk drives
. Eve Electronics SP-1 or SP-1P interface - OR - an
Orphanware PIA2 parallel interface
. Parallel dot matrix printer
. SMARTBasic version 1.0, revision 79

C. BACKUP COPIES/ REGISTRATION

The purchaser may make back up copies of the enclosed
program for personal use. Providing copies to others is in
violation of copyright law. The serial number tied to this
program, is cross referenced to the purchaser's name for
future reference.
The enclosed Warranty/ Registration card must be completed
and returned in order to validate this products warranty and
to facilitate the supplying of information about future
program updates.

SECTION VII - PRINT/SCRN SPEC'S

SCREEN SIZES

FILE TYPE	PIXEL DOTS (COL/ROW)	LINES (COL/ROW)
PAINTMASTER	216 by 168	27 by 21
GPSAVE		
. HGR	256 by 160	32 by 20
. HGR2	256 by 192	32 by 24
. GR	320 by 320	40 by 40

PRINTING SIZES

Graphics mode "K" - 60 dots/inch; 480 dots/line
Image mode "5"   - 72 dots/inch; 576 dots/line

The following charts show maximum print widths (across the 8
1/2 inch side of the paper) needed to print the complete
picture (full coordinates). The first chart is for graphics
modes printing less then 512 dots per line (such as "K");
the second is for those printing more then 512 dots per line
(such as Image mode "5").
This chart will be helpful in using the Margin Offset option
and determining the number of units to offset based on the
graphics mode used. Note that when using the landscape
mode, the picture is rotated 90 degrees to the left.

PRINTING INCHES - LESS THEN 512 DOTS/LINE

FILE TYPE	PORTRAIT	LANDSCAPE	DBL PORTRAIT	DBL LANDSCAPE
PAINTMASTER	3.6	2.8	6.8	4.8
GPSAVE				
. HGR	4.3	2.7	8.0	4.0
. HGR2	4.3	3.2	8.0	4.8
. GR	5.3	5.3	N/A	N/A

PRINTING INCHES - GREATER THEN 512 DOTS/LINE

FILE TYPE	PORTRAIT	LANDSCAPE	DBL PORTRAIT	DBL LANDSCAPE
PAINTMASTER	3.0	2.3	6.0	4.7
GPSAVE				
. HGR	3.6	2.2	7.1	4.4
. HGR2	3.6	2.7	7.1	5.3
. GR	4.4	4.4	N/A	N/A

until the spaces are eliminated. If there are horizontal
lines which are darker, indicating an overlap of the line
spacing, increase the line spacing amount.

To change the line spacing, load the particular setup
program you are using (see page 5) -
GPset5M
GPset5
GPsetKM
GPsetK
GPsetC
List line 9914 and edit the POKE 208,24 portion to read POKE
208,23 (or whatever value you require). Don't forget to
advance the cursor to the end of the line (after POKE
209,15) before you hit return. Then save the program using
the same name.
The poke of 15 into location 209 is the line spacing command
for low res (GR) line spacing. Depending on your printer
this may also require changing.

SECTION II - INITIAL SET UP

A. FIRST
Read ALL the following instructions before you attempt
to run the Graphixpainter program for the first time.

B. BACKGROUND

The ADAM has excellent color graphics capabilities and many
dot matrix printers are capable of printing in graphics
modes.
Now with GRAPHIXPAINTER, the ADAM can print, via a parallel
dot matrix printer, any graphics displayed via SMARTBasic V
1.0.
NOTE: GRAPHIXPAINTER will ONLY print SMARTBasic V 1.0
graphic displays. Graphics generated by non - SMARTBasic
game and cartridge programs can not be printed.

C. PROGRAM OPERATION

MAIN PROGRAM
GP is the name of the primary program. It's purpose is
to:
. Load a previously saved graphics file that has been saved
by either the Paintmaster ((C) Startegic Software) program
or by the GPsave progam contained on this product. See
Section IV for how to save graphics screens for later
printing by GRAPHIXPAINTER.
. Provide options for printing:
        - Portrait (horizontal) or landscape (veritcal)
        - Option to offset the left margin (if your printer has
          the capability to do this)
        - Normal or inverse
        - Normal or double size
        - Select a specified section of the picture to print
. Display the graphics screen as it will print, based on the
options selected
. Print the displayed screen

NOTE: GP is a binary file that can not be loaded or
listed directly. It is automatically loaded and run from
the GPprint program. Any attempt to run or tamper with this
program will result in permanently damaging the program.

SUPPORT PROGRAMS

. GPsetupxx is a program that configures GPmain for the
specific printer to be used for printing. Different
versions are included that should support most printer
types.
. GPsave is a program that can be used to save a
graphics screen as a file that can then be loaded and
printed by the GPmain program.
. GPload is a program that loads and displays a graphics
file for viewing only
. ColRow.H2 is a graphics screen file that can be
displayed/printed and used as an aid in printing portions of
a high resolution picture.
. CBpic is a public domain program for displaying a RLE
digitized picture file, which can then be saved with the
GPsave program for later printing.
. WAMOdrive is a parallel printer driver for SMARTBasic
that will allow you t generate graphics commands directly to
your dot matrix printer (the parallel drivers supplied by
Eve and Orphanware do not allow the passing of the special
ESCape codes required for graphics commands).

PICTURE FILES

There are several picture files on the GRAPHIXPAINTER
disk/ddp that you can print with the supplied programs.

modes, the following explanation will aid you in customizing
the GPsetC program, specifically for your printer.

Referring to lines 9950 and 9954B -
. Memory location 220 contains the first printer command,
which usually indicates to the printer that a special, non
printable command will follow. Most printers use the ESCAPE
code (decimal 27).
. Memory location 221 contains the code to put the printer
in a specific graphics mode e.g. decimal 75 for Mode K.
. Memory location 222 contains the value N1, which is set by
the GP program (most graphics modes have a N2 value as well,
however this is not needed due to the way GRAPHIXPAINTER was
designed)
                -OR-
it can be used as a second graphics set up command code.
. Memory location 223 contains a 0 if there is only one
graphics set up command or the value N1 if there are two
commands.
. Memory location 224 contains the ETX, terminator code (85)
or a zero if there are two graphics set up commands
. Memory location 225 contains a zero if there are two
graphics set up commands
. Memory location 226 contains which memory location has the
N1 value in it.
. Memory location 227 contains a 0 if the maximum number of
dots/line is less then 512 and a 1 if it is greater (your
printer manual will give you the number of dots per line for
each graphics mode).

You may change the values in memory locations 220, 221, 222,
223, 226 and 227 following the rules above, save the program
under the name GPsetC and then select it when using the
GPprint program.

Here is an example of how lines 9950 and 9954 would be
changed if your printer used a graphics mode syntax of
"Escape, 1, *, NI, N2" (we'll assume this print mode prints
560 dots per line)
9950 POKE 220,27:POKE 221,1:POKE 222,42:POKE 223,N1:POKE
224,0:POKE 225,85
9954 POKE 226,223:POKE 227,1

B. LINE SPACING
The line spacing used is 24/216. Different printers, based
on how they have been adjusted and wear and tear, may
require a different line spacing. If your pictures have
thin lines where the printing was "missed" you may need to
change the margin setting to 23/216 to eliminate this
missing line.

Some printers may require different line spacings to print
the pictures correctly. If there are wide vertical spaces
between each line printed, reduce the line spacing number

SECTION VI — CUSTOMIZING GP

A. NON-STANDARD GRAPHICS COMMANDS

Both "K" graphics and Image Mode "5" graphics are provided by GP.
Many printers support other graphics modes, in the same format as"K" and "5" e.g. "L", "M", "0", "1", etc.
You may want to experiment with some of these modes as explained below.

If your printer does not have any graphics modes similar to these you will have to customize one of the Setupxx programs as described below.

NOTE: NIAD will provide custom programming assistance at a charge of $10.00 IF your printer follows standard graphics commands syntax. Contact us for more information.

TO PREPARE A CUSTOMIZED SETUP FILE

The setup files POKE the needed print commands and values into memory locations 200 - 227. Once POKED in memory they remain there and are usuable by the actual print program, GP.
Three commands and value sets are used:
Line Space in locations 200-209
Margin   in locations 210-216
"Reserved" in locations 217-219
Graphics   in locations 220-227
The commands are ended by an ETX (terminating) value of 85.
All the individual setup programs are small, simple programs that POKE the values into the respective areas and then run the GP program.
To customize a setup program, load the setup program you are using (see page 5) or load the GPsetC program if you need to prepare a special, customized version for your printer. List out the program on your printer.

LINE NUMBER	CONTAINS
9910	POKE for line space
9914	values for line space
9930	POKE for Margin set
9934	values for Margin set
9950	POKE for graphics commands
9954	values for graphics commands

NOTE: DO NOT CHANGE VALUES IN ANY LINES OTHER THEN THESE !
Line spacing is covered below and margin setting is either available or not on your printer. If your printer does not support either the Image Mode "5" or Mode "K" graphics

D. First Time Running Procedure

YOU: Load SMARTBasic V 1.0

ADAM: Ready prompt displayed at the bottom of the screen

YOU: Insert the GRAPHIXPAINTER disk/ddp.
        Enter - RUN GPinstall
ADAM: . NIAD Logo displayed
        . GPprint program is run
        . Printer Setup Screen displayed

        Loading GPprint program...
        run GPprint
         GraphixPainter
         GPPRINT
        NIAD Software by W. Motel
        Select PRINTER setup option

        Enter code for setup
         1 = IMode 5 with Margin
         2 = IMode 5 NO Margin
         3 = Mode K with Margin
         4 = Mode K NO Margin
         5 = Your CUSTOM setup file
         9 = QUIT

YOU: Enter printer setup option you desire or that is specific to your printer brand/model per the following instructions.

GRAPHIXPAINTER includes two printer setup programs that will support the vast majority of dot matrix printers. You may have to consult the manual that came with your printer to determine which setup you require. Find the page(s) that refer to the "graphics mode" commands or "bit image" mode commands. These pages will provide the special commands that must sent to your printer to print graphics. Most printers support a variety of graphics modes, providing different densities (number of dots per inch or line) and perhaps different print speeds. The following are the two graphics modes that GRAPHIXPAINTER supports:

SETUP OPTION 1 & 2 - IMAGE MODE 5
Many printers have what are referred to as "Image Modes" for
printing of graphics. Image Mode 5 which prints 576 dots
per line (72 per inch) is good graphics print option used by
some of the older Epson printers and the Okimate 20
printers.
Some printers (such as the Panasonic KX serries) support
both a "K" mode (below) and an IMAGE MODE 5, in which case
you should choose SETUP OPTION 1 or 2 due to the finer
density provided.
Image Mode 5 will be documented in your printer manual in
one of the following ways:

ESC+*+5+n1+n2
   - or -
CHR$(27)+"*"+CHR$(5)+CHR$(n1)+CHR$(n2)
   - or -
27,42,5,n1+n2

SETUP OPTION 3 & 4 - "K" GRAPHICS MODE
"K" Graphics mode is supported on most of the current Epson
and Epson compatible printers such as the Panasonic KX
series, Star NX or NL, Seikosha, IBM and many others.
The "K" mode prints 480 dots per line (60 per inch) and will
be documented in your printer manual in one of the following
formats:

ESC+K+n1+n2
   - or -
CHR$(27)+"K"+CHR$(n1)+CHR$(n2)
   - or -
27,75,n1+n2

MARGIN SET SUB OPTIONS:
Both Options above have sub-options that provide for the
ability to set the left margin before you print a picture.
This will "move" your picture to the right on your paper and
allow you to print various pictures on the same page (you
control the vertical positioning of the picture by advancing
the paper). If your printer does not have a margin set or
print head position command using the following commands
then you must select one of the "NO MARGIN" sub-options -
either 2 or 4 above.

ESC+1+n
   - or -
CHR$(27)+"1"+CHR$(n)
   - or -
27,108,n

SECTION V — RLE FILES

Run Length Encoding is a mechanism for taking a picture and
"encoding" it into an ACII data file which can be decoded
into a high resolution graphics screen by many different
computers.
Many of the RLE files are created from digitized pictures,
made with a special hardware device that captures a picture
and stores it a special computer file.
Digitized pictures offer good resolution and obviously some
pictures that would be difficult to produce via a high
resolution drawing program.

Hence, we have included an enhanced version of the Public
Domain progam CBpic on the GRAPHIXPAINTER product which will
allow you to create a graphics screen from any RLE file and
then create a graphics file (via GPsave) which can be
printed.

We have included some RLE converted graphics files, which
have already been GPsaved and are ready for printing.
Also included is a RLE file (eyes) that has not been
GPsaved. Run the CBpic program and enter eyes as the
filename to see how the program works. Once the graphics
screen has been fully displayed run the GPsave program
(remember that when you type in RUN GPsave, it will not be
visible on the screen because it is a HGR2 screen).

If you have an ADAMLink modem you can easily obtain more RLE
files. Compuserve has a special forum which contains
nothing but RLE files. Enter GO PICS to get to this forum.

The graphics screen files that have been created may now be printed by running the GPprint program.
Remember, when entering the name of the file to be printed, do not enter the c or p at the end of the file extension.

PAINTMASTER files are the second type that can be printed by the GRAPHIXPAINTER program. There is no need to save a Paintmaster screen with the GPsave program because GRAPHIXPAINTER can read a Paintmaster created graphics file directly.

GPLOAD is a standalone program which you can used to load a GPsaved or PAINTMASTER saved program for fast viewing only.

NOTE: When loading a PAINTMASTER graphics file, make sure you do not have a write protect tab on the diskette containing the PAINTMASTER file.

LINE SPACING
The line spacing done within the GRAPHIXPAINTER program should be standard across most printers. If your printer does not provide for the following line spacing commands you will have to choose Setup Option C and modify the GPsetup program for your line spacing commands:

ESC+3+n
 - or -
CHR$(27)+"3"+CHR$(n)
 - or -
27,51,n

SETUP OPTION C
If your printer does not support either the "K" or Image Mode 5 graphics modes then you will be required to modify the SETUP program to set the special commands required by your printer. See Section VI for furthur details on this procedure.

In summary, review your printer manual and choose the printer setup option that matches your printer.

Goto to section III for graphics printing procedures

SECTION III - PRINTING

Having read the instructions in Section II, you are now ready to print a graphics screen. Remember, that GRAPHIXPAINTER will only print graphics files that have been previously stored by the GPsave program contained on this disk/data pack or by the Paintmaster program. Any SMARTBasic graphics screen type may be printed - Low Res, Hi Res or Hi Res 2.

YOU: Run the GPprint program or if you are coming directly from Section II, in which your ran the GPinstall program, just continue (remember that the GPinstall program automatically runs the GPprint program).

ADAM: Printer Setup Screen displayed

        NIAD Software by W. Motel
        Select PRINTER setup option

        Enter code for setup
         1 = IMode 5 with Margin
         2 = IMode 5 NO Margin
         3 = Mode K with Margin
         4 = Mode K NO Margin
         5 = Your CUSTOM setup file
         9 = QUIT

YOU: Select the printer option desired
  NOTE: By running the GPprint program each time you want
  to use GRAPHIXPAINTER you are given the option
  to change the setup option if so desired.
  You may also directly run
  he specific setup program to bypass this
  selection screen.

SECTION IV - LOAD/ SAVE PICTURES

A. OVERVIEW

GRAPHIXPAINTER prints graphics screens that have been stored from ADAM Video memory on a binary file, in one of two specified formats -
. One created by the GPsave program on this disk/tape
. One created by the Paintmaster program

Hence, any SMARTBasic graphics screen must be first saved as a file in one of these formats. All the picture files contained on the GRAHIXPAINTER disk/tape have been saved using the GPsave program supplied. We have included a SMARTBasic program (polygon1.4) that draws a high resolution screen of any polygon. This program is from the NIAD public domain library. We modified the program slightly to retain the high resolution graphics image on the screen so it could be saved as a binary file. Many graphics programs, once they have displayed a graphics screen will erase it if any key is pressed, which would prevent one from saving the screen as a file. You may have to alter the SMARTBasic program to "freeze" the screen. One easy way to do this is to insert a line in the program after the point when the picture is displayed with a STOP command.

Here is the procedure for saving a graphics screen using the GPsave program on this disk/data pack:
1. Run the SMARTBasic graphics program or otherwise get your image to the screen.
2. While the image is still on the screen insert the disk/data pack containing the GPsave program and type RUN GPsave.
3. Your graphics screen will be saved in memory and you will be asked to provide a name for the graphics file.
4. The graphics screen will be saved as two files with an extension based on what type of file it is -
Low Resolution (GR) Screen   - AUTO.GRc and AUTO.GRp
High Resolution (HGR) Screen   - AUTO.HGc and AUTO.HGp
High Resolution2 (HGR2) Screen- AUTO.H2c and AUTO.H2p

     NOTE: Refer to your SMARTBasic manual for information
           on graphics screen types. Remember that if your
           graphics screen is a HGR2, when you enter RUN
           GPsave, it will not be printed on the screen (in
           HGR2 mode the whole screen is graphics and no
           text is displayed). However, SMARTBasic will
           recognize the command and run the GPsave program
           (as long as you enter it correctly). If the
           GPsave program will not run, make sure it is on
           the disk/data pack you have selected and that you
           entered RUN GPsave correctly.

Once you have set your print options hit the PRINT key.
GRAPHIXPAINTER will display the graphics screen to be
printed based on the Print Coordinates chosen and whether
you chose Normal or Inverse print (for high res images
NORMAL will be dis-
played as blue on white, INVERSE as white on blue). If this
is not what you wanted, hit ESCape and make your change on
the print options screen.

Hit any key to print the screen displayed or the Escape key
to return to the Print Options screen.

If you wish to abort the print in progress, hit the Control
and
C keys which will stop the print and take you back to the
print options screen.
NOTE: Not all options are available under all conditions.
For example, low res (GR) screens do not allow you to change
PIX SIZE or PRNT COORD. Also, when printing double size,
you can't offset the margin.

ADAM: . GPsetup program is run
      . GRAPHIXPAINTER Introduction screen displayed

      GraphixPainter
      NIAD Software   by W. Motel

       CURR: TYPE:
      Enter code for media read
       1 = Tape1   2 = Disk1

       9 = QUIT   ENTER>>?

      Insert media now
       TO CONTINUE, hit any KEY
        or ESCAPE to ABORT

YOU: Select Tape 1 or Disk 1 as the source for the
      graphics file you wish to print.
         NOTE: For the initial running select the
               disk/tape that contains the GRAPHIXPAINTER
               program and files.
      . Insert the disk/tape containing picture files
      . Hit any key to continue

ADAM: Scrolls the catalog for the selected device.

YOU: . Hit any key to contnue

ADAM: Displays next screen for type of file selection.

TYPE OF FILE
1=PaintMaster   2=GPsave

   9=Media RESET ENTER>>?

When entering the filename
Omit the suffix c and p
Enter FILENAME ?

TO CONTINUE, hit any KEY
 or ESCAPE to ABORT
 After picture displayed

LOADING loren.H2

. Enter the type of picture file you wish to
print - one saved by the Paintmaster program
or one by the GPsave program on this disk/tape.
NOTE: All picture files on the GRAPHIXPAINTER
      disk/tape were save by the GPsave program.
. Enter the name of the graphics file you wish to
  print.

   NOTE: Graphics files created by either GRAPHIX-
         PAINTER or PAINTMASTER are saved in two
         pieces, with an extra character at the end
         of the file name that denotes each piece.
         DO NOT enter this extra character when you
         input the name of the graphics file you want
         to print.
         EXAMPLES:
         AUTO1 and AUTO2 --> enter AUTO
         MOON.H2C and MOON.H2P --> enter MOON.H2
             ** See Section VI for information on
                picture file types and naming
                conventions.

SPECIAL NOTE: When loading PAINTMASTER files, do not have
              the disk write protect notch covered or the
              graphics file will not load due to a quirk of
              SMARTBasic 1.0.

ADAM: If you did not enter the file name correctly or
      if the file does not exist on the disk/tape
      selected the GP Intro screen will be re-displayed
      and you must select the drive and enter the file
      name again.

      If you entered a valid picture file name it will
      will be loaded and displayed.

YOU: If the picture is not the one you wanted then
     hit the Escape key.
     Otherwise hit any key to continue.

ADAM: Saves the graphics file in memory and displays
      the Print Options screen.

DEFINITIONS:

CURR: Name of the graphics file selected
TYPE: GP for a file saved by the GPsave program
         PM for a file saved by the Paintmaster program

OPTIONS: (CONTROLLED VIA SMARTKEYS)

ORIENTATION: Portrait is the default, hit SK I to select
             Landscape (vertical print). Hit SK I to go back
             to portrait.

MARGIN   : Default is 0 units. Hit SK II and then use
             arrow keys to select margin offset value
             The value is in units, which are specific to
             the printer you have i.e. for the Panasonic
             1080 there are 10 units to an inch. The
             maximum offset is 40 units. If you offset too
             much you will "overprint" the right margin,
             simply abort the print and redo the margin
             offset.
             NOTE: You must have selected a printer option
                   that provides for a margin set command
                   to use this option. See Install section.

PRINT TYPE : Default is normal. Hit SK III to select
             inverse print. NOTE: Inverse can only be used
             for high res pictures and must be used for
             all RLE converted digitized picture files.
             Low res options are ALL PATTERN which prints an
             unique pattern for each color block, including
             black. NO BLK PATT will not print any black
             blocks. SOLID B ON W will print all colors
             other then black as a solid black block, black
             will not print any pattern. SOLID W on B is
             the reverse.

PIX SIZE   : Default is normal. Hit SK IV to change to
             to large print option.

PRNT COORD : Default is to print the entire picture. Hit SK
             V which will allow you to first set the
             starting Row & Column via the arrow keys. Then
             hit return to set the ending Row & Column.

RTN LOAD   : Hit SK VI to return to the previous screen and
             load another picture.