

FOR ATARI*

400/800/1200/600/800XL



a versatile horizontal graphics dump for EPSON*, NEC*, PROWRITER*, GEMINI*, OKIDATA92*, OKI82 w/OKIGRAPH, OKI84 w/STEP2 ROMs*, DMP-80*, PANASONIC KXP1090*, MANNESMAN-TALLEY SPIRIT*, IDS MICROPRISM 480. all machine language. includes graphic program on disk with demos and text LISTER program.

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PRINTWIZ

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THANK-YOU FOR BUYING THIS PRODUCT.

PRINTWIZ

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1. EPSON GEMINI 10X
2. GEMINI 10
3. PROWRITER
4. NEC 8023
5. OKIDATA 92
6. OKIDATA 82A
7. EPSON FX80 (1/2 OPT)
8. GP550A

INTRODUCTION

PRINTWIZ is a graphics screendump in horizontal format for EPSON, NEC, PROWRITER, OKIDATA, and GEMINI printers. With PRINTWIZ booted, the user may program or load another program providing that the new program does not attempt to occupy the PRINTWIZ dump memory area. PRINTWIZ may be loaded with BASIC, the ASSEMBLER cartridge, or no cartridge at all. Memory requirements for the dump portion are just over 5 pages, or about 1300 bytes. When the proper key sequence is executed, even while another program is running, program execution is temporarily halted and whatever is on the screen is sent to the printer. This includes all graphics and mixed custom screens (with scan lines multiples of 8). There are a number of commands allowing centering, width and height adjustment, partial screen dump, inversion, and others which will be explained elsewhere in this manual. PRINTWIZ does not dump player-missile graphics or stress color interpretation. It does however allow repetitive printing, smooth pictorial to text transition, and short screen dumping. Horizontal dumps by nature are more difficult to program and less prone to exact screen replication than vertical dumps. By manipulation of height and width parameters, however, one can find a reasonable approximation with all printers for which this program is intended. In many cases deliberate distortion can help pictorial representation; especially textual matter. The most important reason for a horizontal format is so that a picture, chart, etc., may be followed or preceded by text which runs in the same direction. This could include normal text generated by the printer, or graphics dump generated text, or both. Any number of screens may be appended together to form a picture of any length.

Please take the time to read this manual thoroughly. There are special requirements for some printers, and not all commands will function on all printers. Also, the demos included with PRINTWIZ have important comments for those who intend to do some custom dumping. List the programs and read them.

This disk also includes a program called LISTER. Its purpose is to dump program listings or any record files which have inverted or special ATARI characters which cause problems when listed normally to the printer.

LOADING

Turn off the computer. Remove or install cartridge as necessary. (All demos and LISTER require BASIC). Install the PRINTWIZ disk in drive#1. Turn on the computer. When the screen turns black and displays the four configuration choices, just press the number of the printer that applies to you. RETURN is not necessary. Turn on interface (if necessary--depends on type). Turn on the printer. Hit SYSTEM RESET to clear the screen and the number left there from the load. That number was left there, by the way, so that you can verify your printer choice as being the correct one. You are now ready to dump whatever passes before you on the screen; from another program, DOS, or even the ATARI MEMO PAD. If the printer/interface isn't on line when you attempt to send a dump print command, the screen will go into the attract mode (darken and change colors). This little warning was as subtle as we could get and should not disturb most programs during run time. The attract mode will clear after the next key is pressed.

It is not a bad idea to leave the sound turned up a bit when printing to familiarize yourself with the sounds of normal printing (actually serial bus communication). You will not hear this if using an MPP1100 interface.

Refer to the command, demo and LISTER sections for further instructions.

Mannesman-Talley Spirit, DMP-80, and Panasonic KXP1090 users should use choice #1 (or #2) when using this program. Oki82 users must have Okigraph chips installed. Oki84 users must have the Step 2 ROMs installed (call OKI @ (601) 235-2600).

Epson FX80 users may use either the normal Epson mode (#1) or the FX80 mode which due to FX80 capabilities, acts more like NEC/Prowriter in the Single width mode--better 1:1 ratio; and Double width is double width instead of double density.

GEMINI users should make sure to have switches 1 and 4 on; 2 and 3 off on the rear of the printer.

KEY COMMANDS

PRINTWIZ may be altered and executed from the keyboard, or by jumping to user entry points from within your own program. All keyboard commands are checked during an interrupt and must be PRECEDED BY AND HELD SIMULTANEOUSLY with the CONTROL and SHIFT keys. Throughout this manual, SHIFT and CONTROL may be referred to as 'C-S'. See the cover and the program 'CMDSHT' for user entry addresses.

C-S,P: Print command. Starts dump execution. Printer/interface not online will cause screen to go into attract mode until the next key is pressed.

C-S,Q: Abort printing. SYSTEM RESET is also a safe way to abort dump (it also resets all defaults). DO NOT USE THE BREAK KEY WHILE PRINTING IS IN PROGRESS!

C-S,SPACE: Toggles centering on and off. Off (left margin) is the default. Depending on which printer and width mode you are using, the values will automatically be changed or ignored.

C-S,I: Toggles inverse printing on and off. The off condition is the default.

C-S,H: Toggles double height on and off. Off is the default.

C-S,G: Toggles printer reset to normal print mode and the associated extra linefeed. The default condition is on, or reset with extra linefeed. When you wish to connect two or more separate screens, especially if they are inverse, it is necessary to turn it off in order to avoid a gap. See the labler demo program listing for another reason to use this command.

C-S,S: Set single dot per screen dot width. Default width. Low density. All printers.

C-S,D: Double dot per screen dot. Hi density narrow on EPSON, GEMINI, OKIDATA. Low density double wide on NEC, PROWRITER.

C-S,T: Not for OKIDATA. Triple dot per screen dot. Higher density max width.

C-S,E: Extra command for FX, 10-x, NEC, PROWRITER only. Quad dot per screen dot. Most useful on NEC/PROWRITER.

The short screen function must be set before EACH screen is printed. This is accomplished by POKEing address 8204 (\$200C) with a number from 1 to 23. The value of zero or 24 there will dump the entire screen. The address is reset to zero after each screen is dumped and must be re-POKEd as necessary.

LISTER

The lister program included on the PRINTWIZ disk does not require the dump to be booted in order to work. It may be transferred to another disk if desired. It does require BASIC.

The purpose of LISTER is to list those problem programs with lots of inverse and special ATARI characters. LISTER will also work on any record files and source code.

BASIC programs which have been SAVED to disk must first be LOADED and LISTed back to disk. When LISTER is RUN, you will be shown the directory of the disk in drive #1. Be sure to enter the LISTed version of the program or file you want. You do not have to enter 'D:' or 'D1:'. The program will then give you three choices of printout. 40 column (actually 38) will look exactly like a screen listed program. This will aid those working from a magazine article or writing an article. The 80 column mode is not available to OKIDATA. It prints code out as a single line. The maximum line length for this mode is 120 characters. All modes are logic seeking and will print faster than the normal dump since the actual length of the line is sent to the printer and trailing blanks are suppressed.

important!:

DO NOT TRY TO USE SYSTEM RESET OR BREAK TO EXIT LISTER OR STOP PRINTOUT. If you do, the keyboard will lock and you'll have to re-boot. Press 'E' to stop printing or to exit program when prompted. Exits in this manner will return the SYSTEM RESET and BREAK keys to their normal operation mode.

DEMOS

The demos for PRINTWIZ are in basic, so you must have a cartridge installed to access them. LISTER has separate instructions elsewhere in this manual. The demo programs may be transferred to another disk. List the programs to the printer to study the methods used to access the dump directly from within a program. Many of them should be listed using LISTER. See the LISTER instructions prior to use. The demo programs must first be LISTed in order for LISTER to list them.

The first demo is a keyboard demo.

Follow these instructions:

Load PRINTWIZ and set up printer with print head about 2" down from paper tear line. If you're already loaded, hit SYSTEM RESET to clear parameters so you know where you're starting from. RUN"D:GRLOD. This will automatically put the file HAT.DAT on the screen. Now send the following commands :

C-S,I;C-S,SPACE;C-S,G

Allow the printout to complete. Hit the BREAK key (not SYSTEM RESET--to retain parameters). Execute RUN"D:LODFNT. Execute RUN"D:CAL. This is a calendar generator. Enter the month as a digit (or two) and the year as 4 digits. The year must be entered as 4 digits or an incorrect first day of the month will result. Now send the double height command C-S,H then C-S,P.

The following demos show commands sent from within a program.

CMSHT will prompt you to set your print head to the paper tear line. In addition to printing a command reference sheet, CMSHT will also serve as an example of page centering a dump. Notice that use of keys is unnecessary due to a USR jump in the program. Read listing for this program, paying close attention to REM statements. Pokes to change parameters can be changed by user.

CONFIG when RUN will show you the status of several PRINTWIZ parameters. As you enter PRINTWIZ commands from the keyboard as you would with any other screen, the display will update to show you the changes on the screen. Please notice how the key repeat function is still operative relative to sending commands. The speed with which this takes place is relative to the individual program or screen being used. You may, of course, also use the print and abort functions to see how these changes affect the printout. Use this program to familiarize yourself with key command usage or to insure properly set parameters prior to program execution.

LABLER--hit SYSTEM RESET if necessary and RUN program. To stop printing you MUST use C-S,Q. To see how a short screen dump and repetition are used, read listing. Short dumps may also be executed from the direct mode (i.e., no program running). This label prints out on 1 x 3.5" AVERY labels. REM statements contain changes for 1.5 x 4.0" labels. The asterisk border is about the maximum safe limit for the label. Just type over the the appropriate lines in the program to change them for your own use. Do a practice run on your regular printing paper to find the top of form for your particular printer. I use my eye to line up the tear line to a mark scribed on the top pin of my printhead. Use whichever method suits you best. You will probably have to shift the labels slightly to the right of where proper centering is for 9.5" (8.5) paper.

You can use the methods used in CMDSHT and LABLER to generate custom stationery and forms. Run off a hundred or so and write or use a program to fill in the blanks. For the ambitious amongst you, with 12 screen drawings and minor modification to the CAL program you could easily generate a calendar for the entire year.

You may change the DATA statements in GRLOD and LODFNT to load your own screens or fonts, or the other fonts on the PRINTWIZ disk. Simply "LOAD" the respective program and type over the filename in the data statement with your new filename. Type RETURN. Then "RUN" the program with your data file in the drive. The other fonts on the disk have the extender: ".FNT". You can also use other fonts you may have created with a font generator.

GRLOD will load any file of 7680 bytes. This includes GRAPHICS 8, 7 1/2, 9, 10, 11. The color registers and won't be set properly but you'll be able to dump. Poke address 623 with a 64, 128, or 192 to set up GRAPHICS 9, 10, or 11 (leave the display list POKes at 15). PRINTWIZ handles modes 9-11 with color interpretation. The POKes in GRLOD into the display list are preset to 15. Actually, this is unnecessary for GRAPHICS 8. Change these POKes from 15 to 14 to implement GRAPHICS 7 1/2. POKE registers at 708, 709, 710, 711, and 712 for color. MICROPAINTER and GRAPHICS MASTER files may be loaded by GRLOD by merely replacing the new filename in the DATA statement on the last line of GRLOD. Remember to LOAD not RUN. See the KOALA LOADER section for KOALA files; they are not saved the same as normal ATARI horizontal uncompressed files. EXAMPLE: LOAD"D: GRLOD". LIST the program. Type over HAT.DAT on the last line with the data filename you want to put up on the screen. Then insert your data disk and type RUN.

LODGR7 is similar to GRLOD except it will load graphics 7 files. This includes PAINT and DRAWIT files.

CALLING DOS

When the PRINTWIZ dump is booted, a special Disk Utility Package (DUP) is also loaded. It is ram resident, that is, it does not need to be loaded each time you call DOS. This prevents the dump and your program from being erased when you need DOS. The amount of memory used is only 768 bytes as opposed to the normal 5000. Also, access time is microseconds instead of seconds. All of the normal ATARI functions are supported with the exception of copying and binary saves. In exchange, besides time savings, space savings, and safety, there is a built-in hex-dec converter. RUN AT addresses can also be entered in dec or hex. You can leave your program environment at any time to use the converter or read the directory, etc., without losing your program upon return.

Call up DOS (DUP) and take a look at the menu. It is a little different than what you're normally used to seeing. The functions are accessed by entering the first (inverted) character shown in the menu along with RETURN. Filenames MUST be preceded with 'D:' or 'Dn:' with one exception:

When using the 'R' rename function, the old filename should have a device name; the new name after the comma should not. The second device is understood. This is in keeping with normal ATARI DOS.

A summary of commands follows:

DIRECT Enter 'D', RETURN to read directory. At the 'D#' prompt enter the drive # or RETURN only for drive #1.

***LOCK** Enter '*', RETURN to lock a file (or files). At the 'FN?' prompt, enter the filename. Remember to use 'Dn:'.

UNLOCK Unlock file or files. See previous command.

RENAM Enter 'R', RETURN. At the 'FN?' prompt use this format:
'Dn:OLDNAME,NEWNAME'

FORMAT After entering 'F', RETURN, answer '?' with 'Y', RETURN. Answer the 'D#' prompt with a number or RETURN only for drive #1. An extra 'D' entered before the drive # will cause default to drive #1.

LOAD Binary load. Loads machine language files only. Answer 'FN?' prompt as usual.

@RUN Run at address. After entering '@', RETURN, another '@' will appear. It is a prompt for the address. Enter a hex address preceded by '\$', or a decimal address preceded by '.' (a period).

WDOS Write DOS.SYS. This command writes DOS.SYS only, not DUP.SYS also, as in ATARI DOS.

\$>. Hex to dec converter. Enter your hex number preceded by a '\$' on the same input line.

- >\$ Dec to hex converter. Enter your decimal number preceded by a '.' (period). The result will be a four digit hex number and will not show the '\$' sign.

CART Return to cartridge.

The '>' greater than sign is the command input prompt. An inverted 'E' followed by a number is a system error number. The values are on the inside covers of your ATARI manuals.

MPP1100 SPECIAL SET-UP

Due to the operating system chip change for the MPP1100, two bytes must be changed in order to allow the PRINTWIZ dump to properly function. This disk contains a program to permanently change the disk for any or all of the printers which you might use with the MPP1100. Later we will tell how to temporarily reconfigure the program when in memory if you normally use a serial port (parallel) interface, i.e. 850 or ATR8000, and must temporarily use an MPP1100 interface. Please be aware that this information WILL NOT apply to the MPP1150 interface which connects to the serial port (the same as the disk drive); disregard this information for that application.

This program requires a BASIC cartridge to run. You may RUN it after booting the PRINTWIZ disk or any other disk with DOS. RUN the program and follow the instructions on the screen to the letter. If the write protect tab becomes damaged during removal, use a small piece of disk label or masking tape to recover the notch after running the program. Re-RUN the program for each printer you will use with the MPP1100. Make sure to re-install the write protect tab when through! If you have booted up with the PRINTWIZ disk, re-boot in order to change the computer memory to the new code you have just changed on the disk. From then on the disk will boot the proper code for the MPP1100 relative to the printer configurations you have chosen to change.

If you have the need to temporarily use the MPP1100 and do not wish to permanently change the PRINTWIZ dump disk, then you may alter memory from the BASIC or ASSEMBLER cartridges by changing two bytes: POKE 8443 (\$20FB), 123 (\$7B) and 8444 (\$20FC), 238 (\$EE). This will change the usage for any printer type to the MPP1100 interface. POKE 8443 (\$20FB), 89 (\$59) and POKE 8444 (\$20FC), 228 (\$E4) to temporarily change from the MPP1100 to a serial port (parallel) interface.

IMPORTANT KOALA PAD INFO

The GRL0D program will not load normal compressed KOALA storage files, but an undocumented KOALA function will: When the picture is on the screen (not the menu), press the greater than key(>). The picture will save to a file named 'PICTURE.'. This file will load to Micropainter and with GRL0D herein. Change the name with DOS later to use this function again on the same disk. The less than key will also load normal format pictures into KOALA if they are named 'PICTURE.' and the '<' is pressed while the picture (not menu) screen is up. Some KOALA programs don't do this. If not, or as you desire, we have included in this revision the BASIC/machine language loader/saver, KOALA. You can use it to quickly load a KOALA compressed file and/or save it to the MICROPainter/GRAPHICS MASTER format. KOALA will also set up stored colors, etc.

NOTES AND TIPS

It seems almost needless to say that as dot density and width increase, so does the time to print. This is mainly a function of the printer's speed and method of handling graphics. OKIDATA printers even though they print only 4 bits per line, will still print faster than an EPSON MX80. In fact, the MX80 is the worst machine as far as time requirements are concerned due to the 256 byte buffer and the return to the right margin on each pass within the same line. Avoid using higher density or more than single width if the dump is for informational or practice purposes. Even disregarding the increase in speed this is a good idea for prolonging print head and ribbon life.

With most printers it is not a good idea to use the roller knob to advance or adjust the paper while the printer power is on. That's why there is a formfeed and linefeed button. Use the buttons or turn the printer off to adjust paper. This will greatly extend gear and motor life.

GEMINI printers are more fussy about printer head to platen spacing than the others. If using labels, set the adjustment out a few clicks to prevent the ribbon from binding.

Play with PRINTWIZ to find top of form, exact paper adjustment for centering, and the closest commands for printer to screen ratios of 1:1.

NEC/PROWRITER printers give the most diverse and different types of 1:1 ratios.

EPSON's best 1:1 is triple width with double height.

Finally!: a use for the ATARI MEMO PAD. POKE 82,0 set the cursor to column 0 instead of 2. Type BYE from the BASIC or ASSEMBLER cartridge. Hit CLEAR with SHIFT or CONTROL to clear the screen. You can now set up that quick chart or message that's not worth writing a program for. The MEMO PAD is nice for this purpose because wraparound, deletes, and RETURNS don't cause extra spaces or error messages. All PRINTWIZ functions may still be accessed from the keyboard. Press SYSTEM RESET to return to the cartridge.

You may use a double density drive with PRINTWIZ. After booting in the single density program disk, most double density drives and conversions may be turned off and then back on in double density. See your drive instructions to see if a double density default turn-on switch must be set. After turning the drive back on, hit SYSTEM RESET to let the computer know that the drive type has changed.

PRINTWIZ uses low RAM. Avoid writing below LOMEM. Pages 4 and 6 are still available to you.

Avoid programs which steal the keyboard interrupt vector. If the printing keyboard goes dead, you may still be able to use PRINTWIZ from the entry addresses.

Screens using VBI's and DLI's may cause timing problems and be difficult or impossible to print.

Mixed mode screens must be in groups of 8 scan lines. For example, eight 8's; two 4's; one 7, one 4 and two 8's all are in groups of eight scan lines. All built-in graphics modes are that way already. Adding custom text lines generally will require little if any effort to keep up the scan line groupings.

To achieve color approximation, use programs such as MICROPainter or the like to 'color' drawing areas with different patterns prior to loading and dumping.

Some incorrectly wired printer cables will not return correct fault and/or busy signals to the computer. The result will be that the computer will continue sending data to the printer even though the printer is turned off. Use C-S,Q, or SYSTEM RESET to abort.

If you should experience a lock-up, and re-boot to find that you still cannot print, the problem could be with the interface being locked-up. Try powering it down.

The 'CMDSHT' program shows a calculation for vertically centering a 24 line dump on an 11" sheet of paper. Please note that in normal text lines are 12 dots high and 1/6 of an inch. In graphics, lines are 8 dots high and 1/9 of an inch. There are 66 normal lines to a page and 99 possible graphics lines. So: the number of normal linefeeds to center a 24 line dump= $((99-24)*8)/12/2$. If the dump is double height, 24 should be 48.

If the screen is in GRAPHICS 9,11, PRINTWIZ is programmed to approximate 5 of the 16 shades this is the best that could be achieved since in single width it would be impossible to do better with firing pin resolution. It will still look better than the same data dumped from a straight GR. 8 screen.

AUTORUN.SYS files can still be loaded from DOS as long as they don't overwrite vital addresses. The DOSINI and LOMEM vectors may be 'stolen' as long as they check those vectors and service the routines there before the take care of themselves; which is the way it should always be done anyway. For the inexperienced programmer, this may mean that maybe you can still load that page 6 (1536) routine you love so dearly. About the worst that can happen is that you'll have to reboot. Worth trying?

ADDENDUM TO PRINTWIZ

PAINT LOADER -- This disk now contains a loading utility for Atari Paint and Reston Paint picture files. After loading Printwiz with Basic, RUN "D:LOADPAINT" and follow the prompts. The data files for Paint have the Extender ".PIC". This extender as well as the device "D:" need not be entered. If Drive #2 is used, however, do use "D2:(NAME)". After the picture is loaded, you will be given the choice of how to use the bottom of the screen. Also, you may load a special font if desired: MAKE SURE TO INSTALL A DISK WITH A FONT FILE YOU WILL BE USING. If the font data file has the extender ".FNT", as many do, you need not enter the extender. Press shift, clear to clear the lower area and type your message. Use control and delete or insert, as usual, to center. POKE 752, 1 to get rid of the cursor. POKE 82, 0 to use whole screen. With big letters, there is no cursor but with the yellow letter on the screen, you can see the present position when the letter is blue, or type a letter then delete it to see where you are. Because graphics 1 and 2 text lines are different than graphics zero, screen editing keys may skip lines when using the up down arrow keys. Use the sideways arrows or SPACE to go directly from one line to the next. If you're having problems, use SHIFT or CONTROL, CLEAR to clear screen and put cursor back at the upper left corner of the text window. When ready, use normal Printwiz commands to dump screen. Since Printwiz does not interpret color only on & off in graphics 7, you may have to change texture, background in your pictures to get some details to show.

LOGO CARTRIDGE -- This version of Printwiz has been modified slightly to allow compatibility with the LOGO cartridge. Since LOGO does not use the normal keyboard interrupt, you must turn it on in order to use the Printwiz keyboard commands. The file on this disk called "LOGOPROC." will load in two procedures to do this. After booting Printwiz with LOGO in, LOAD "D:LOGOPROC". This will load the procedures "PW" and "PPWW". "PW" will turn on the normal Atari key interrupt on and allow normal use of Printwiz key commands. However, you will then get two characters per keystroke when communicating with LOGO and will need to turn the Atari interrupt off to continue programming after a dump. That is the function of "PPWW". When the interrupt is on, typing "PW" will print "PPWW", which will turn off the extra interrupt. Typing will then be normal and typing 'PW' again will turn it back on, etc.

The special primitives .DEPOSIT and .CALL may also be used to access Printwiz. The .CALL for the dump is .CALL 8419 (not 8418, 8418 is for Basic only and will lock up LOGO). These primitives may be used in procedures. Do not touch any keys during a dump. Use .DEPOSIT to change width, centering, etc., per the Printwiz manual back cover.

Remember that pressing Reset resets Printwiz and that the procedures 'PW' and 'PPWW' will have to be retyped or reloaded. Using these procedures will also allow you to abort with SHIFT + CONTROL, Q which using .CALL won't. Instructors are urged to contact us for assistance. Please give us your mailing address and telephone number. We may choose not to return calls, but will communicate by mail instead.

PRINTWIZ COMMAND SHEET

COMMAND	CMD KEY*	USER ADDRESS	USER VALUE	DEFLT
CENTER	SPACE	8199 (\$2007)	0,255	OFF
INVERSE	I	8200 (\$2008)	0,255	OFF
WIDTH	S/D/T/E	8201 (\$2009)	0,1,2,3	5
HEIGHT	H	8202 (\$200A)	0,255	OFF
RESET&LF	G	8203 (\$200B)	0,255	ON
SHORTDUMP		8204 (\$200C)	0-23	OFF
ABORT	R			
PRINT	P			

SYSRESET RESETS DEFAULTS

PRINT FROM BASIC PROGRAM: X=USR(8418)

PRINT FROM M/L PROGRAM: JSR \$20E3

*USE WITH **CONTROL+SHIFT**