

printer

COLLABORATORS

	<i>TITLE :</i> printer		
<i>ACTION</i>	<i>NAME</i>	<i>DATE</i>	<i>SIGNATURE</i>
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REVISION HISTORY

NUMBER	DATE	DESCRIPTION	NAME

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Chapter 1

printer

1.1 printer.doc

```
CMD_FLUSH
CMD_INVALID
CMD_RESET
CMD_START
CMD_STOP
CMD_WRITE
PRD_DUMPRTPORT
PRD_PRTCOMMAND
PRD_QUERY
PRD_RAWWRITE
PWrite()
```

1.2 printer.device/CMD_FLUSH

```
NAME
CMD_FLUSH -- abort all I/O requests (immediate)

FUNCTION
CMD_FLUSH aborts all stopped I/O at the unit.

IO REQUEST
io_Message  mn_ReplyPort set if quick I/O is not possible
io_Device   preset by the call to OpenDevice
io_Command  CMD_FLUSH
io_Flags    IOB_QUICK set if quick I/O is possible
```

1.3 printer.device/CMD_INVALID

```
NAME
CMD_INVALID -- invalid command

FUNCTION
CMD_INVALID is always an invalid command, and sets the device
```

error appropriately.

IO REQUEST
io_Message mn_ReplyPort set if quick I/O is not possible
io_Command CMD_INVALID
io_Flags IOB_QUICK set if quick I/O is possible

1.4 printer.device/CMD_RESET

NAME
CMD_RESET -- reset the printer

FUNCTION
CMD_RESET resets the printer device without destroying handles to the open device.

IO REQUEST
io_Message mn_ReplyPort set if quick I/O is not possible
io_Device preset by the call to OpenDevice
io_Command CMD_RESET
io_Flags IOB_QUICK set if quick I/O is possible

1.5 printer.device/CMD_START

NAME
CMD_START -- restart after stop (immediate)

FUNCTION
CMD_START restarts the unit after a stop command.

IO REQUEST
io_Message mn_ReplyPort set if quick I/O is not possible
io_Device preset by the call to OpenDevice
io_Command CMD_START
io_Flags IOB_QUICK set if quick I/O is possible

1.6 printer.device/CMD_STOP

NAME
CMD_STOP -- pause current and queued I/O requests (immediate)

FUNCTION
CMD_STOP pauses all queued requests for the unit, and tries to pause the current I/O request. The only commands that will be subsequently allowed to be performed are immediate I/O requests, which include those to start, flush, and finish the I/O after the stop command.

IO REQUEST
io_Message mn_ReplyPort set if quick I/O is not possible

io_Device preset by the call to OpenDevice
 io_Command CMD_STOP
 io_Flags IOB_QUICK set if quick I/O is possible

1.7 printer.device/CMD_WRITE

NAME

CMD_WRITE -- send output to the printer

FUNCTION

This function causes a buffer of characters to be written to the current printer port (usually parallel or serial). The number of characters is specified in io_Length, unless -1 is used, in which case output is sent until a 0x00 is encountered.

The Printer device, like the Console device, maps ANSI X3.64 style 7-bit printer control codes to the control code set of the current printer. The ANSI codes supported can be found below.

NOTES

Not all printers will support all functions. In particular you may not assume that the MARGINS or TABS can be set. Close to half the supported printers don't fully implement one or the other. If you want the features of margins or tabs you will need to fake it internally by sending out spaces.

Note that the printer device may have already sent out a "set margins" command to the printer. If you are faking your own margins, be sure to cancel the old ones first. (use the "aCAM" command)

Defaults are set up so that if a normal AmigaDOS text file is sent to PRT:, it has the greatest chance of working.

(AmigaDOS text files are defined as follows:)

tabs	- every 8
CR (0x0D)	- moves to start of current line
LF (0x0A)	- moves to start of next line

IO REQUEST

io_Message	mn_ReplyPort set
io_Device	preset by OpenDevice
io_Unit	preset by OpenDevice
io_Command	CMD_WRITE
io_Length	number of characters to process, or if -1, process until 0x00 encountered
io_Data	pointer to block of data to process

RESULTS

io_Error : if CMD_WRITE succeeded, then io_Error will be zero.
 Otherwise io_Error will be non-zero.

SEE ALSO

printer.h, parallel.device, serial.device, Preferences

ANSI X3.64 style COMMANDS

aRIS	ESCc	hard reset	
aRIN	ESC#1	initialize to defaults	
aIND	ESCD	true linefeed (lf)	
aNEL	ESCE	return,lf	
aRI	ESCM	reverse lf	*
aSGR0	ESC[0m	normal character set	
aSGR3	ESC[3m	italics on	
aSGR23	ESC[23m	italics off	
aSGR4	ESC[4m	underline on	
aSGR24	ESC[24m	underline off	
aSGR1	ESC[1m	boldface on	
aSGR22	ESC[22m	boldface off	
aSFC	SGR30-39	set foreground color	
aSBC	SGR40-49	set background color	
aSHORP0	ESC[0w	normal pitch	
aSHORP2	ESC[2w	elite on	
aSHORP1	ESC[1w	elite off	
aSHORP4	ESC[4w	condensed on	
aSHORP3	ESC[3w	condensed off	
aSHORP6	ESC[6w	enlarged on	
aSHORP5	ESC[5w	enlarged off	
aDEN6	ESC[6"z	shadow print on	
aDEN5	ESC[5"z	shadow print off	
aDEN4	ESC[4"z	doublestrike on	
aDEN3	ESC[3"z	doublestrike off	
aDEN2	ESC[2"z	Near Letter Quality (NLQ) on	
aDEN1	ESC[1"z	NLQ off	
aSUS2	ESC[2v	superscript on	
aSUS1	ESC[1v	superscript off	
aSUS4	ESC[4v	subscript on	
aSUS3	ESC[3v	subscript off	
aSUS0	ESC[0v	normalize the line	*
aPLU	ESCL	partial line up	*
aPLD	ESCK	partial line down	*
aFNT0	ESC(B	US char set (default)	or Font 0
aFNT1	ESC(R	French char set	or Font 1
aFNT2	ESC(K	German char set	or Font 2
aFNT3	ESC(A	UK char set	or Font 3
aFNT4	ESC(E	Danish I char set	or Font 4
aFNT5	ESC(H	Sweden char set	or Font 5
aFNT6	ESC(Y	Italian char set	or Font 6
aFNT7	ESC(Z	Spanish char set	or Font 7
aFNT8	ESC(J	Japanese char set	or Font 8
aFNT9	ESC(6	Norweign char set	or Font 9
aFNT10	ESC(C	Danish II char set	or Font 10
aPROP2	ESC[2p	proportional on	*
aPROP1	ESC[1p	proportional off	*
aPROP0	ESC[0p	proportional clear	*
aTSS	ESC[n E	set proportional offset	*

aJFY5	ESC[5 F	auto left justify	*
aJFY7	ESC[7 F	auto right justify	*
aJFY6	ESC[6 F	auto full justify	*
aJFY0	ESC[0 F	auto justify off	*
aJFY3	ESC[3 F	letter space (justify)	*
aJFY1	ESC[1 F	word fill(auto center)	*
aVERP0	ESC[0z	1/8" line spacing	
aVERP1	ESC[1z	1/6" line spacing	
aSLPP	ESC[nt	set form length n	
aPERF	ESC[nq	set perforation skip to n lines (n>0)	
aPERF0	ESC[0q	perforation skip off	
aLMS	ESC#9	Left margin set	*
aRMS	ESC#0	Right margin set	*
aTMS	ESC#8	Top margin set	*
aBMS	ESC#2	Bottom margin set	*
aSTBM	ESC[Pn1;Pn2r	set T&B margins	*
aSLRM	ESC[Pn1;Pn2s	set L&R margin	*
aCAM	ESC#3	Clear margins	
aHTS	ESCH	Set horiz tab	*
aVTS	ESCJ	Set vertical tabs	*
aTBC0	ESC[0g	Clr horiz tab	*
aTBC3	ESC[3g	Clear all h tab	*
aTBC1	ESC[1g	Clr vertical tabs	*
aTBC4	ESC[4g	Clr all v tabs	*
aTBCALL	ESC#4	Clr all h & v tabs	*
aTBSALL	ESC#5	Set default tabs (every 8)	
aEXTEND	ESC[Pn"x	Extended commands This is a mechanism for printer drivers to support extra commands which can be called by ANSI control sequences	
aRAW	ESC[Pn"r	Next 'Pn' chars are raw (ie. they are not parsed by the printer device, instead they are sent directly to the printer.	

(*) indicates that sending this command may cause unexpected results on a large number of printers.

1.8 printer.device/PRD_DUMPRPORT

NAME

PRD_DUMPRPORT -- dump the specified RastPort to a graphics printer

FUNCTION

Print a rendition of the supplied RastPort, using the supplied ColorMap, position and scaling information, as specified in the printer preferences.

IO REQUEST

io_Message mn_ReplyPort set if quick I/O is not possible.
io_Command PRD_DUMPRPORT.

io_Flags IOB_QUICK set if quick I/O is possible.
 io_RastPort ptr to a RastPort.
 io_ColorMap ptr to a ColorMap.
 io_Modes the 'modes' flag from a ViewPort structure,
 (the upper word is reserved and should be zero).

If you are running under version 36, or greater
 of graphics.library, it is recommended that
 you fill in "io_Modes" with the ULONG (32-bit)
 value returned from calling:

```
ULONG ModeID = GetVPMODEID(struct ViewPort *);
```

Doing so provides for upwards compatability with
 the new display modes available under V36
 (example: aspect ratio calculations for new
 display modes).

io_SrcX x offset into the RastPort to start printing from.
 io_SrcY y offset into the RastPort to start printing from.
 io_SrcWidth width of the RastPort to print (from io_SrcX).
 io_SrcHeight height of the RastPort to print (from io_SrcY).
 io_DestCols width of the printout in printer pixels.
 io_DestRows height of the printout in printer pixels.
 io_Special flag bits
 (some of which pertain to DestCols and DestRows).
 -if SPECIAL_MIL is set, then the associated
 parameter is specified in thousandths of
 an inch on the printer. ie. if DestCols = 8000,
 DestRows = 10500 and SPECIAL_MILROWS and
 SPECIAL_MILCOLS is set then the printout would be
 8.000 x 10.500 inches.
 -if SPECIAL_FULL is set, then the specific dimension
 is set to the maximum possible as determined
 by the printer limits or the configuration
 limits; whichever is less.
 -if SPECIAL_FRAC is set, the parameter is
 taken to be a longword binary fraction
 of the maximum for that dimension.
 -if all bits for a dimension are clear,
 (ie. SPECIAL_MIL/FULL/FRAC and ASPECT are NOT set)
 then the parameter is specified in printer pixels.
 -if SPECIAL_CENTER is set then the image will be
 put between the left and right edge of the paper.
 -if SPECIAL_ASPECT is set, one of the dimensions
 may be reduced/expanded to preserve the aspect
 ratio of the print.
 -SPECIAL_DENSITY(1-7) this allows for a maximum of 7
 different print densities. DENSITY1 is the lowest
 density and the default.
 -SPECIAL_NOFORMFEED - this allows for the mixing of
 text and graphics or multiple graphic dumps on page
 oriented printers (usually laser jet printers).
 When this flag is set the page will not be ejected
 after a graphic dump. If you perform another
 graphic dump without this flag set OR close the
 printer after printing text after a graphic dump,

the page will be ejected.

- if SPECIAL_TRUSTME is set then the printer specific driver is instructed to not issue a reset command before and after the dump. If this flag is NOT checked by the printer specific driver then setting this flag has no effect. Since we now recommend that printer driver writers no longer issue a reset command it is probably a safe idea to always set this flag when calling for a dump.
- if SPECIAL_NOPRINT is set then the following is done: Compute print size, set 'io_DestCols' and 'io_DestRows' in the calling program's 'IODRPreq' structure and exit, DON'T PRINT. This allows the calling program to see what the final print size would be in printer pixels. Note that it modifies the 'io_DestCols' and 'io_DestRows' fields of your 'IODRPreq' structure. It also sets the print density and updates the 'MaxXDots', 'MaxYDots', 'XDotsInch', and 'YDotsInch' fields of the 'PrinterExtendedData' structure.

There following rules for the interpretation of io_DestRows and io_DestCols that may produce unexpected results when they are not greater than zero and io_Special is zero. They have been retained for compatability. The user will not trigger these other rules with well formed usage of io_Special.

When io_Special is equal to 0, the following rules (from the V1.1 printer.device, and retained for compatibility reasons) take effect. Remember, these special rules are for io_DestRows and io_DestCols and only take effect if io_Special is 0).

- a) DestCols>0 & DestRows>0 - use as absolute values.
ie. DestCols=320 & DestRows=200 means that the picture will appear on the printer as 320x200 dots.
 - b) DestCols=0 & DestRows>0 - use the printers maximum number of columns and print DestRows lines. ie. if DestCols=0 and DestRows=200 then the picture will appear on the printer as wide as it can be and 200 dots high.
 - c) DestCols=0 & DestRows=0 - same as above except the driver determines the proper number of lines to print based on the aspect ratio of the printer. ie. This results in the largest picture possible that is not distorted or inverted. Note: As of this writing, this is the call made by such program as DeluxePaint, GraphicCraft, and AegisImages.
 - d) DestCols>0 & DestRows=0 - use the specified width and the driver determines the proper number of lines to print based on the aspect ratio of the printer. ie. if you desire a picture that is 500 pixels wide and aspect ratio correct, use DestCols=500 and DestRows=0.
 - e) DestCols<0 or DestRows>0 - the final picture is either a reduction or expansion based on the fraction $|DestCols| / DestRows$ in the proper aspect ratio.
- Some examples:
- 1) if DestCols=-2 & DestRows=1 then the printed picture will be 2x the AMIGA picture and in the proper aspect ratio.
-

- (2x is derived from $|-2| / 1$ which gives 2.0)
 2) if DestCols=-1 & DestRows=2 then the printed picture will
 will be 1/2x the AMIGA picture in the proper aspect ratio.
 (1/2x is derived from $|-1| / 2$ which gives 0.5)

NOTES

The printer selected in preferences must have graphics capability to use this command. The error 'PDERR_NOTGRAPHICS' is returned if the printer can not print graphics.

Color printers may not be able to print black and white or greyscale pictures -- specifically, the Okimate 20 cannot print these with a color ribbon: you must use a black ribbon instead. If the printer has an input buffer option, use it. If the printer can be uni or bi directional, select uni-directional; this produces a much cleaner picture. Most printer drivers will attempt to set unidirectional printing if it is possible under software control.

Please note that the width and height of the printable area on the printer is in terms of pixels and bounded by the following:

- a) WIDTH = (RIGHT_MARGIN - LEFT_MARGIN + 1) / CHARACTERS_PER_INCH
- b) HEIGHT = LENGTH / LINES_PER_INCH

Margins are set by preferences.

For BGR printer support, the YMC values in the printer specific render.c functions equate to BGR respectively, ie. yellow is blue, magenta is green, and cyan is red.

For version 2.1 of the Operating System (the Localization release), some of the printer drivers have been modified to support European A size paper (e.g., "A4"). See preferences.h for a list of defined sizes. For most printers, this means the maximum X dots will be calculated based on millimeters minus 1/2 inch (approx 13 mm) - this is consistent with existing driver calculations (e.g., 8.0 inches wide for US_LETTER, and US_LEGAL sizes).

Some printers, like the HP_LaserJet, and HP_DeskJet also calculate maximum Y dots.

For all modified printer drivers, selecting paper sizes larger than the printer can handle may result in unexpected, or clipped results. This allows for the possibility of using these drivers with future printers which may physically [and internally] support these larger sizes of paper.

It is assumed that the user will make reasonable choices when selecting paper size (e.g., not select WIDE TRACTOR for a NARROW TRACTOR printer).

Data Structures

The printer specific and non-specific data structures can be read ONCE you have opened the printer device. Here is a code fragment to illustrate how to do just that.

```

#include <exec/types.h>
#include <devices/printer.h>
#include <devices/prtbase.h>
#include <devices/prtgfx.h>

struct IODRPreReq PReq;
struct PrinterData *PD;
struct PrinterExtendedData *PED;

open the printer device / if it opened...
if (OpenDevice("printer.device", 0, &PReq, 0) == NULL) {
    get pointer to printer data
    PD = (struct PrinterData *)PReq.io_Device;
    get pointer to printer extended data
    PED = &PD->pd_SegmentData->ps_PED;
    let's see what's there
    printf("PrinterName = '%s', Version=%u, Revision=%u\n",
        PED->ped_PrinterName, PD->pd_SegmentData->ps_Version,
        PD->pd_SegmentData->ps_Revision,);
    printf("PrinterClass=%u, ColorClass=%u\n",
        PED->ped_PrinterClass, PED->ped_ColorClass);
    printf("MaxColumns=%u, NumCharSets=%u, NumRows=%u\n",
        PED->ped_MaxColumns, PED->ped_NumCharSets, PED->ped_NumRows);
    printf("MaxXDots=%lu, MaxYDots=%lu, XDotsInch=%u, YDotsInch=%u\n",
        PED->ped_MaxXDots, PED->ped_MaxYDots,
        PED->ped_XDotsInch, PED->ped_YDotsInch);
    CloseDevice(&PReq);
}

```

Preferences

If you want the user to be able to access the printer preferences items without having to run preferences (like DPAINT II's printer requester), here is what you do. You can look at the printer's copy of preferences by referring to 'PD->pd_Preferences' (the printer device MUST already be opened at this point). After you have this you could put up a requester and allow the user to change whatever parameters they wanted. BEAR IN MIND THAT YOU ARE RESPONSIBLE FOR RANGE CHECKING THESE SELECTIONS! Listed below are the printer preferences items and their valid values.

PrintPitch	- PICA, ELITE, FINE.
PrintQuality	- DRAFT, LETTER.
PrintSpacing	- SIX_LPI, EIGHT_LPI.
PrintLeftMargin	- 1 to PrintRightMargin.
PrintRightMargin	- PrintLeftMargin to 999.
PaperLength	- 1 to 999.
PrintImage	- IMAGE_POSITIVE, IMAGE_NEGATIVE.
PrintAspect	- ASPECT_HORIZ, ASPECT_VERT.
PrintShade	- SHADE_BW, SHADE_GREYSCALE, SHADE_COLOR.
PrintThreshold	- 1 to 15.
PrintFlags	- CORRECT_RED, CORRECT_GREEN, CORRECT_BLUE, CENTER_IMAGE, IGNORE_DIMENSIONS, BOUNDED_DIMENSIONS, ABSOLUTE_DIMENSIONS, PIXEL_DIMENSIONS, MULTIPLY_DIMENSIONS, INTEGER_SCALING, ORDERED_DITHERING, HALFTONE_DITHERING.

```

                                FLOYD_DITHERING, ANTI_ALIAS, GREY_SCALE2
PrintMaxWidth      - 0 to 65535.
PrintMaxHeight     - 0 to 65535.
PrintDensity       - 1 to 7.
PrintXOffset       - 0 to 255.

```

Asynchronous I/O

The recommended way to do asynchronous i/o is...

a) To send requests for i/o.

```

struct IORequest *ioreq;
struct MsgPort *port;
UBYTE signal;

port = ioreq->io_Message.mn_ReplyPort;
signal = port->mp_SigBit;

SendIO(ioreq);  send request
Wait(signal);  wait for completion (go to sleep)
while ((Msg = GetMsg(port)) != NULL) {  get ALL messages
}

```

b) To abort a previous request for i/o.

```

struct IORequest *ioreq;

AbortIO(ioreq);  abort request
WaitIO(ioreq);  wait for reply

```

at this point you can re-use 'ioreq'.

Note that in the above examples 'ioreq' could be any one of...

- a) struct IOStdReq a standard i/o request
- b) struct IODRPRReq a dumpport i/o request
- c) struct IOPrtCmdReq a printer command i/o request

It is recommend that you do asynchronous i/o in your programs and give the user a way of aborting all requests.

V1.3 Printer Driver Notes

In general densities which use more than one pass should only be used for B&W shade dumps. They can be used for Grey-Scale or Color Shade dumps BUT the output may tend to look muddy or dark. Also multiple pass Color dumps tend to dirty or smear the ribbon (ie. yellow will get contaminated with the other colors on the ribbon; you have been warned).

Alphacom_AlphaPro_101

1. Daisywheel printer (text only).

Brother_HR-15XL

1. Daisywheel printer (text only).

CalComp_ColorMaster

1. Thermal transfer b&w/color printer (text and graphics).
2. Use Black ribbon for non-color dumps; Color ribbon for color dumps.
3. Linefeeds # of vertical dots printed.
4. Densities supported are 203x200(1) dpi.
5. This is a dual printer driver. Select a PaperSize of 'Narrow Tractor' for use with the ColorMaster; 'Wide Tractor' for use with the ColorView-5912 (which uses 11 x 17 inch paper).

CalComp_ColorMaster2

1. Thermal transfer b&w/color printer (text and graphics).
2. Use Black ribbon for non-color dumps; Color ribbon for color dumps.
3. Linefeeds # of vertical dots printed.
4. Densities supported are 203x200(1) dpi.
5. This is a dual printer driver. Select a PaperSize of 'Narrow Tractor' for use with the ColorMaster; 'Wide Tractor' for use with the ColorView-5912 (which uses 11 x 17 inch paper).
6. This driver is the same as the Calcomp_ColorMaster driver EXCEPT it is approximately 2 times faster (during color dumps) and requires LOTS of memory (up to 1,272,003 bytes for a full 8 x 10 inch (1600 x 2000 dot) color dump). Typically full-size (color) dumps are 1600 x 1149 dots and require 730,767 bytes. Memory requirements for the ColorView-5912 are up to 2,572,803 bytes for a full 10 x 16 inch (2048 x 3200 dot) color dump. Typically full-size (color) dumps are 2048 x 2155 dots and require 1,732,623 bytes. The memory requirements are 1/3 when doing a non-color printout (on both the ColorMaster and ColorView).

Canon_PJ-1080A

1. Ink jet b&w/color printer (text and graphics).
2. Linefeeds # of vertical dots printed.
3. Densities supported are 83x84(1) dpi.

CBM_MPS1000

1. Dot matrix b&w printer (text and graphics).
2. Linefeeds # of vertical dots printed (-1/3 dot if PaperType = Single). *2
3. Density XDPI YDPI XYDPI Comments
 - 1 120 72 8640
 - 2 120 144 17280 two pass
 - 3 240 72 17280 *1
 - 4 120 216 25920 three pass
 - 5 240 144 34560 two pass *1
 - 6 240 216 51840 three pass *1
 - 7 same as 6
4. Print width for US_LETTER size paper is 8.0 inches.
5. As of version 35.48, this driver calculates maximum X dots for European A size paper as defined in preferences.h. Some of these sizes are too large for this printer.

Diablo_630

1. Daisywheel printer (text only).

Diablo_Advantage_D25

1. Daisywheel printer (text only).

Diablo_C-150

1. Ink jet b&w/color printer (text and graphics).
2. Always linefeeds 4 dots (limitation of printer).
3. A PaperSize of 'Wide Tractor' selects a maximum print width of 8.5 inches (for wide roll paper).
5. Densities supported are 120x120(1) dpi.

EpsonQ (24-pin Epson compatible)

1. Dot matrix b&w/color printer (text and graphics).
2. Drives all EpsonQ (LQ1500, LQ2500, etc.) compatible printers.
3. Linefeeds # of vertical dots printed.
4. Density XDPI YDPI XYDPI Comments

1	90	180	16200	
2	120	180	21600	
3	180	180	32400	
4	360	180	64800	*1
- 5,6,7 same as 4
5. A PaperSize of 'Wide Tractor' selects a maximum print width of 13.6 inches (for wide carriage printers).
6. A PaperType of 'Single' uses only 16 of the 24 pins, whereas a PaperType of 'Fanfold' uses all 24 pins. The 'Single' option is useful for those printers which have a weak power supply and cannot drive all 24 pins continuously. If during a single pass of the print head you notice that the top two thirds of the graphics are darker than the bottom one third then you will probably need to drop down to 16 pins.
7. As of version 35.71, this driver calculates maximum X dots for European A size paper as defined in preferences.h. The calculation is based on millimeters minus 1/2 inch (approx 13mm). Maximum paper width is 13.6 inches, so some European A sizes are too large for this printer.

EpsonX[CBM_MPS-1250] (8/9-pin Epson compatible)

1. Dot matrix b&w/color printer (text and graphics).
 2. Drives all EpsonX (EX/FX/JX/LX/MX/RX, etc.) compatible printers.
 3. Linefeeds # of vertical dots printed (-1/3 dot if PaperType = Single). *2
 4. Density XDPI YDPI XYDPI Comments

1	120	72	8640	
2	120	144	17280	two pass
3	240	72	17280	*1
4	120	216	25920	three pass
5	240	144	34560	two pass *1
6	240	216	51840	three pass *1
 - 7 same as 6
 5. A PaperSize of 'Wide Tractor' selects a maximum print width of 13.6 inches (for wide carriage printers).
 6. Use this driver if you own a CBM_MPS-1250 (as it is EpsonX compatible).
-

7. As of version 35.42, this driver calculates maximum X dots for European A size paper as defined in preferences.h. The calculation is based on millimeters minus 1/2 inch (approx 13mm). Maximum paper width is 13.6 inches, so some European A sizes are too large for this printer.

EpsonXOld (8/9-pin Epson compatible)

1. Dot matrix b&w printer (text and graphics).
2. Drives all very old EpsonX (EX/FX/JX/LX/MX/RX, etc.) compatible printers.
3. Linefeeds # of vertical dots printed.
4. Density XDPI YDPI XYDPI Comments

1	60	72	4320	
2	120	72	8640	(double speed) *1
3	120	72	8640	
4	240	72	17280	*1
5	120	72	8640	(for use on old Star printers)
6	240	72	17280	(for use on old Star printers) *1
7	240	72	17280	(same as density 4) *1
5. A PaperSize of 'Wide Tractor' selects a maximum print width of 13.6 inches (for wide carriage printers).
6. Use this driver if the EpsonX driver does not work properly in graphics or text mode on your EpsonX compatible printer.

generic

1. Text only printer.

Howtek_Pixelmaster

1. Plastic ink jet b&w/color printer (text and graphics).
2. Linefeeds # of vertical dots printed.
3. Density XDPI YDPI XYDPI Comments

1	80	80	6400
2	120	120	14400
3	160	160	25600
4	240	240	57600
5,6,7	same as 4		
4. Maximum print area is 8.0 x 10.0 inches.

HP_DeskJet

1. Ink jet non-color printer (text and graphics).
2. Linefeeds # of vertical dots printed.
3. Density XDPI YDPI XYDPI Comments

1	75	75	5625
2	100	100	10000
3	150	150	22500
4	300	300	90000
5,6,7	same as 4		
4. Maximum print area is 8.0 x 10.0 inches US_LEGAL, and 8.0 x 13.0 inches US_LETTER.
5. As of version 35.29, the driver will calculate maximum area size for European A size paper as defined in preferences.h. The driver calculates the maximum X, and Y dots based on millimeters, minus 1/2 inch from the width, and minus 1" from the height (approx 13mm, and 26mm respectively).

Therefore the margin area is consistent with US paper sizes.

6. Some European A sizes are too large for this printer.

HP_LaserJet (LaserJet+/LaserJetII compatible)

1. Laser engine non-color printer (text and graphics).
2. Linefeeds # of vertical dots printed.
3. Density XDPI YDPI XYDPI Comments
1 75 75 5625
2 100 100 10000
3 150 150 22500
4 300 300 90000
5,6,7 same as 4
4. Maximum print area is 8.0 x 10.0 inches US_LEGAL, and 8.0 x 13.0 inches US_LETTER.
5. As of version 35.59, the driver will calculate maximum area size for European A size paper as defined in preferences.h. The driver calculates the maximum X, and Y dots based on millimeters, minus 1/2 inch from the width, and minus 1" from the height (approx 13 mm, and 26 mm respectively). Therefore the margin area is consistent with US paper sizes.
6. Some European A sizes are too large for this printer.

HP_PaintJet

1. Ink jet b&w/color printer (text and graphics).
2. Linefeeds # of vertical dots printed.
3. Densities supported are 180x180(1) dpi.

HP_ThinkJet

1. Ink jet non-color printer (text and graphics).
2. Linefeeds # of vertical dots printed.
3. Density XDPI YDPI XYDPI Comments
1 96 96 9216
2 192 96 18432
3,4,5,6,7 same as 4
4. This printer prints 640 dots X in 96 DPI mode, and 120 dots X in 192 DPI mode. Other sizes are not supported by the printer.

Imagewriter II (Imagewriter compatible)

1. Dot matrix b&w/color printer (text and graphics).
2. Linefeeds # of vertical dots printed.
3. Density XDPI YDPI XYDPI Comments
1 80 72 5760
2 120 72 8640
3 144 72 10368
4 160 72 11520
5 120 144 17280 two pass
6 144 144 20736 two pass
7 160 144 23040 two pass

Nec_Pinwriter (24-wire Pinwriter compatible (P5/P6/P7/P9/P2200))

1. Dot matrix b&w/color printer (text and graphics).
-

2. Drives all NEC 24-wire Pinwriter compatible printers.
3. Linefeeds # of vertical dots printed.
4. Density XDPI YDPI XYDPI Comments
1 90 180 16200
2 120 180 21600
3 180 180 32400
4 120 360 43200 two pass
5 180 360 64800 two pass
6 360 180 64800
7 360 360 129600 two pass
5. A PaperSize of 'Wide Tractor' selects a maximum print width of 13.6 inches (for wide carriage printers).
6. As of version 35.17, this driver calculates maximum X dots for European A size paper as defined in preferences.h. The calculation is based on millimeters minus 1/2 inch (approx 13mm). Maximum paper width is 13.6 inches, so some European A sizes are too large for this printer.

Okidata_92

1. Dot matrix non-color printer (text and graphics).
2. Always linefeeds 7/72 inch (limitation of printer in graphics mode).
3. Densities supported are 72x72 dpi.

Okidata_293I

1. Dot matrix b&w/color printer (text and graphics).
2. Drives 292 or 293 using the IBM interface module.
3. Linefeeds # of vertical dots printed (-1/2 dot if PaperType = Single) *3
4. Density XDPI YDPI XYDPI Comments
1 120 144 17280
2 240 144 34560
3 120 288 34560 two pass
4 240 288 69120 two pass
5,6,7 same as 4
5. A PaperSize of 'Wide Tractor' selects a maximum print width of 13.6 inches (for wide carriage printers).

Okimate-20

1. Thermal transfer b&w/color printer (text and graphics).
2. Use Black ribbon for non-color dumps; Color ribbon for color dumps.
3. Linefeeds an even # of dots printed. (ie. if 3 printed, 4 advanced).
4. Densities supported are 120x144(1) dpi.

Quadram_QuadJet

1. Ink jet b&w/color printer (text and graphics).
2. Linefeeds # of vertical dots printed.
3. Densities supported are 83x84(1) dpi.

Qume_LetterPro_20

1. Daisywheel printer (text only).

Seiko_5300

1. Thermal transfer b&w/color printer (graphics only).
2. Use Black ribbon for non-color dumps; Color ribbon for color dumps.
3. Density XDPI YDPI XYDPI Comments
1 152 152 23104 drives CH-5301 printer
2 203 203 41209 drives CH-5312 printer
3 240 240 57600 drives CH-5303 printer
4, 5,6,7 same as 3
You must select the proper density to drive the specific printer that you have.
4. This driver is not on the V1.3 Workbench or Extras disk. It is available on BIX and directly from Seiko.

Seiko_5300a

-
1. Thermal transfer b&w/color printer (graphics only).
 2. Use Black ribbon for non-color dumps; Color ribbon for color dumps.
 3. Density XDPI YDPI XYDPI Comments
1 152 152 23104 drives CH-5301 printer
2 203 203 41209 drives CH-5312 printer
3 240 240 57600 drives CH-5303 printer
4, 5,6,7 same as 3
You must select the proper density to drive the specific printer that you have.
 4. This driver is the same as the Seiko_5300 driver EXCEPT it is approximately 2 times faster (during color dumps) and requires LOTS of memory (up to 1,564,569 bytes for a full 8 x 10 inch (1927 x 2173 dot) color dump). Typically full-size (color) dumps are 1927 x 1248 dots and require 898,569 bytes. The memory requirements are 1/3 when doing a non-color printout.
 5. This driver is not on the V1.3 Workbench or Extras disk. It is available on BIX and directly from Seiko.

Tektronix_4693D

-
1. Thermal transfer b&w/color printer (graphics only).
 2. Densities supported are 300x300(1) dpi
 3. Due to the way the printer images a picture none of the printer preferences options affect the printout with the following exceptions:
a)Aspect - Horizontal, Vertical
b)Shade - B&W, Grey_Scale, Color
...as a result of this only full size pictures can be printed.
 4. Keypad menu option 3b COLOR ADJUSTMENT may be set from the keypad. For normal prints this option should be set to "do not adjust".
 5. Keypad menu option 3d VIDEO COLOR CORRECTION may be set from the keypad. For normal prints this option should be set to "do not adjust".
 6. Keypad menu option 5 BACKGROUND COLOR EXCHANGE may be set from the keypad. For normal prints this option should be set to "print colors as received".
 7. Once a picture has been printed additional copies may be printed without resending by using the printers keypad.
 8. This driver is not on the V1.3 Workbench or Extras disk. It is available on BIX and directly from Tektronix.

Tektronix_4696

-
1. Ink jet b&w/color printer (text and graphics).
 2. Always linefeeds 4 dots (limitation of printer).
-

3. Densities supported are 121x120(1), 242x120(black)(2) and 242x120(color)(3).
Selecting a density of 2 or higher really doesn't give you true 242 dpi resolution since the printer only has 121 x dots per inch. Instead this mode tells the printer to go into it's double pass mode. Here, it outputs a line of dots at 121 dpi; and outputs the line again (shifted to the right by 1/242 of an inch). This produces much more vibrant colors and gives the illusion of more resolution. One drawback is that large areas of solid colors (red, green, and blue specifically) tend to over-saturate the paper with ink. Density1 outputs all colors in one pass. Density 2 does a double pass on black. Density 3 does a double pass on all colors. Density 1 to 3 correspond to the printer's graphics printing modes 1 to 3 (respectively).
4. This driver is not on the V1.3 Workbench or Extras disk. It is available on BIX and directly from Tektronix.
5. A PaperSize of 'Wide Tractor' selects a maximum print width of 9.0 inches (for wide roll paper).

Toshiba_P351C (24-pin Toshiba compatible)

1. Dot matrix b&w/color printer (text and graphics).
2. Drives all Toshiba_P351C compatible printers.
3. Linefeeds # of vertical dots printed.
4. Density XDPI YDPI XYDPI Comments
1 180 180 32400
2 360 180 64800
3,4,5,6,7 same as 2
5. A PaperSize of 'Wide Tractor' selects a maximum print width of 13.5 inches (for wide carriage printers).

Toshiba_P351SX (24-pin Toshiba compatible)

1. Dot matrix b&w/color printer (text and graphics).
2. Drives all Toshiba_P351SX (321SL, 321SLC, 341SL) compatible printers.
3. Linefeeds # of vertical dots printed.
4. Density XDPI YDPI XYDPI Comments
1 180 180 32400
2 360 180 64800
3 180 360 64800 two pass
4 360 360 129600 two pass
5,6,7 same as 4
5. A PaperSize of 'Wide Tractor' selects a maximum print width of 13.5 inches (for wide carriage printers).

Xerox_4020

1. Ink jet b&w/color printer (text and graphics).
2. Always linefeeds 4 dots (limitation of printer).
3. This driver is IDENTICAL to the Diablo_C-150 driver EXCEPT it outputs all black dots TWICE. This is a special feature of this printer and produces much more solid, darker black shades. Please note that some printing time overhead results from this feature; if you don't want it use the Diablo_C-150 driver.
4. Densities supported are 121x120(1) and 242x240(2) dpi.
Selecting a density of 2 or higher really doesn't give you true 240 dpi resolution since the Xerox_4020 only has 121 x dots per inch. Instead this mode tells the printer to go into it's pseudo 240 dpi mode.

Here, it outputs a line of dots at 121 dpi; moves the paper up 1/240 of an inch and outputs the line again (shifted to the right by 1/240 of an inch). This produces much more vibrant colors and gives the illusion of more resolution. One drawback is that large areas of solid colors (red, green, and blue specifically) tend to over-saturate the paper with ink.

5. A PaperSize of 'Wide Tractor' selects a maximum print width of 9.0 inches (for wide roll paper).

Notes

- *0 - on most printers friction fed paper tends to produce better looking (ie. less horizontal banding) graphic dumps than tractor fed paper.
- *1 - in this mode the printer cannot print two consecutive dots in a row. It is recommended that you only use this density for B&W Shade dumps.
- *2 - only when 72 YDPI is selected. This option is useful if you notice tiny white horizontal strips in your printout.
- *3 - only when 144 YDPI is selected. This option is useful if you notice tiny white horizontal strips in your printout.

1.9 printer.device/PRD_PRTCOMMAND

NAME

PRD_PRTCOMMAND -- send a command to the printer

FUNCTION

This function sends a command to either the parallel or serial device. The printer device maps this command to the control code set of the current printer. The commands supported can be found with the printer.device/Write command. All printers may not support all functions.

IO REQUEST IOPrtCmdReq

io_Message	mn_ReplyPort set
io_Device	preset by OpenDevice
io_Unit	preset by OpenDevice
io_Command	PRD_PRTCOMMAND
io_PrtCommand	the actual command number
io_Parm0	parameter for the command
io_Parm1	parameter for the command
io_Parm2	parameter for the command
io_Parm3	parameter for the command

RESULTS

Errors: if the PRD_PRTCOMMAND succeeded, then io_Error will be zero. Otherwise io_Error will be non-zero. An error of -1 indicates that the command is not supported by the current printer driver. This could be used to check if the connected printer supports a particular command (*italics* for example).

SEE ALSO

printer.device/Write printer.h, parallel.device, Preferences

1.10 printer.device/PRD_QUERY

NAME

PRD_QUERY -- query printer port/line status

FUNCTION

This command returns the status of the printer port's lines and registers. Since the printer port uses either the serial or parallel port for i/o, the actual status returned is either the serial or parallel port's status.

IO REQUEST

io_Message mn_ReplyPort set if quick I/O is not possible

io_Device preset by the call to OpenDevice

io_Command PRD_QUERY

io_Data ptr to 2 UBYTES where result will be stored.

RESULTS

io_Data	BIT	ACTIVE	FUNCTION (SERIAL DEVICE)
LSB	0	low	reserved
	1	low	reserved
	2	low	reserved
	3	low	Data Set Ready
	4	low	Clear To Send
	5	low	Carrier Detect
	6	low	Ready To Send
MSB	7	low	Data Terminal Ready
	8	high	read buffer overflow
	9	high	break sent (most recent output)
	10	high	break received (as latest input)
	11	high	transmit x-OFFed
	12	high	receive x-OFFed
	13-15		reserved

io_Data	BIT	ACTIVE	FUNCTION (PARALLEL DEVICE)
	0	hi	printer busy (offline)
	1	hi	paper out
	2	hi	printer selected
(WARNING: the bit 2 line is also connected to the serial port's ring indicator pin on the A500 and A2000)			
	3-7		reserved

io_Actual 1-parallel, 2-serial

1.11 printer.device/PRD_RAWWRITE

```

NAME
PRD_RAWWRITE -- transparent write command

FUNCTION
This is a non standard write command that performs no
processing on the data passed to it.

IO REQUEST
io_Message   mn_ReplyPort set if quick I/O is not possible
io_Command   PRD_RAWWRITE
io_Flags     IOB_QUICK set if quick I/O is possible
io_Length    the number of bytes in io_Data
io_Data      the raw bytes to write to the printer

```

1.12 printer.device/PWrite

```

NAME
PWrite -- internal write to printer port

SYNOPSIS
error = (*PrinterData->pd_PWrite) (buffer, length);
D0                                     A0          D0

FUNCTION
PWrite writes 'length' bytes directly to the printer.  This
function is generally called by printer drivers to send
their buffer(s) to the printer.

This function is accessed by referencing off the PrinterData (PD)
structure.  Below is a code fragment to show how to do get access
to a pointer to the PrinterData (PD) structure.

#include <exec/types.h>
#include <devices/printer.h>
#include <devices/prtbase.h>

struct IODRPReq PReq;
struct PrinterData *PD;
struct PrinterExtendedData *PED;

/* open the printer device (any version); if it opened... */
if (OpenDevice("printer.device", 0, &PReq, 0) == NULL) {

    /* get pointer to printer data structure */
    PD = (struct PrinterData *)PReq.io_Device;

    /* write something directly to the printer */
    (*PD->pd_PWrite) ("Hello world\n", 12);

    CloseDevice(&PReq); /* close the printer device */
}

```