

# **"Chuck's Printer Driver"**

## The Radically Cool Printer Driver

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## **"Chuck's Printer Driver"**

### Dot Matrix And LaserJet Printer Driver

#### **Who wrote the driver?**

© 1991-1996 Charles Rentmeesters

Much thanks to Symantec for providing such a wonderful C compiler and environment for the Macintosh. And thanks of course to Apple Computer for producing such a good computer.

#### **What is it?**

"Chuck's Printer Driver" is a printer driver -- chooser device for using Epson compatible dot-matrix and HP Laser Jet compatible printers with your Macintosh computer. (Not to mention the hundreds of printers out there that are compatible with the above printers, or Panasonic printers.) It has been tested on a Macintosh Powerbook 180c (system 7.1, and system 7.5), with a Panasonic KX-P1080i printer, a IBM Color Jetprinter, and a HP Color DeskJet 540. It prints in Text (draft or NLQ) mode and Graphics (Low, Medium, and High) modes. It is Freeware, however I do request a small donation (\$20 U.S.) to help pay for my costs. I would like to hear what you think of it, and what I should add, even if you don't send me money. *Note* : Text printing won't always turn out the way you see it on the screen. This is because of the nature of the Macintosh being a graphics based computer and not a text based computer. For best results I suggest always using the graphics modes of the driver. (There is another public-domain printer driver that does a fair job of text printing called "Daisy", but I hear it has a few bugs.)

#### **How do I get a copy of Daisy?**

Daisy can be found on the anonymous ftp site [mac-archive.umich.edu](http://mac-archive.umich.edu) or it used to be found on the CD-ROM archive put out by the Arizona State User's Group. (The CD-ROM is entitled "MacWizards - BBS In A Box.") Old CD-ROMs can be ordered from them at:

MacWizards  
718 E. Campbell Ave.  
Gilbert, AZ 85234  
U.S.A.

#### **How do I install the driver?**

You can use the printer driver by dropping it into your system folder, and selecting it from the chooser desk accessory. You should also take time to choose the set-up option in chooser so that the printer driver knows how to access your printer and what type of printer it is. If you wish to use background printing you must have Multifinder or be running System 7 (or later). To enable background printing copy the application "Chuck's Print Spooler" into your system folder and in the chooser setup for the printer

driver turn Background Printing ON. You need to have some

sort of serial to parallel converter if you are trying to hook-up a printer that only has a parallel port -- see your printer manual.

### How do I hook up my parallel printer to my Macintosh?

The Grappler 9-pin interface can be turned into a simple serial to parallel converter by setting all of its dip-switches to the ON position. (The Grappler settings are 9600 baud, no parity, 1 stop bit). Otherwise, talk to your local computer retailer about getting a serial-to-parallel converter. You will also have to get a serial cable that connects your Mac to the serial-to-parallel converter. Serial-to-Parallel converters can range anywhere from \$30 (US dollars) to several hundred for fancy ones with large memory buffers. One place to get a parallel to serial converter is:

Elek-Tek  
7350 N Linder Ave.  
Dept. C1133  
Skokie, IL 60077  
Voice: 1-800-395-1000  
FAX: 1-708-677-1081

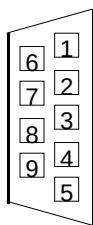
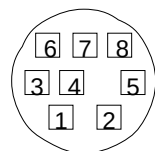
They sell a QVS Bi-Directional Interface Converter for \$54.99, and also Practical Peripherals Microbuffers starting at \$145.00.

### How do I hook up my serial printer to my Macintosh?

If you have a serial printer, that is, one with an RS232 or RS422 interface, all you need is a serial cable from your computer to your printer. These can be bought from your local computer dealer.

If you wish to make your own Macintosh serial to RS232 cable, these are the pin connections for a 8pin mini-din Macintosh serial port to the standard RS232 pin outs.

Macintosh 8 minidin Pin #	Macintosh Description	RS232 Name	Mouse db9 Pin #	Mouse db25 Pin #
---------------------------------	--------------------------	---------------	-----------------------	------------------------



1	Handshake Out	RTS	7	4
1	Handshake Out	DTR	4	20
2	Handshake In	CTS	8	5
3	Transmit Data	TD	3	2
4	Ground	GND	5	7
5	Receive Data -	RD	2	3
8	Receive Data +	GND	5	7

Depending on the printer, you may have to null-modem that cable, which would mean

switching pins 5 & 3 and also pins 1 & 2 at the Macintosh connector.

**Where can someone reach the author?**

I can most likely be reached by internet e-mail to [chuck@msn.fullfeed.com](mailto:chuck@msn.fullfeed.com) or my Web Page, <http://www.msn.fullfeed.com/~chuck/>. I read this mail approximately once a week, and will respond via internet e-mail usually within a few days. I can also be reached by mail:

Charles Rentmeesters  
410 N Carroll St  
Madison, WI 53703-1804  
U.S.A.

Or give me a call at 608-238-5837.

**Why was the driver written?**

After receiving the 9-pin Grappler interface, and being disappointed in the way that it handled things, I decided to write my own printer driver in software. A software version would have more options and control over the original printer, where the Grappler only used the Imagewriter driver and did conversion in hardware. I thought the Grappler was a tremendous kludge. (But I bet it saved a huge bundle in development costs!)

**When are new versions available?**

Version 1.4.0 is available now. New versions will be released when I receive enough feedback to release a new version. So send me donations and your ideas so I can make new versions, and fix bugs!

**Disclaimer**

The Printer Driver is freeware, copy it and give it to all your friends. This program can not and should not be sold for any price, it is free. (I would like a donation of \$20 though, if you use the printer driver). I do not take any responsibility for the use of my software, use at your own risk, it may have bugs.

**I'm having trouble getting the Driver to work, what should I do?**

First, make sure the settings in the chooser are set properly for your printer. That includes not only the baud rate and other serial settings, but also the configuration for your printer. If the printer still prints nothing when you try to print from an application, try using a terminal program. Boot the terminal program up and set the terminal up to the printer port and all the proper serial port settings for your printer. Then in the terminal program type a few lines and press return and control-J a few times. If that still prints nothing, then the settings you have are wrong or the cable you have is bad or the serial-to-parallel converter you have is bad.

**What control codes does the driver use?**

The program uses the following printer control codes (Epson 9-pin mode):

For draft and NLQ modes:

ESC x 1	Set NLQ mode
ESC x 0	Set draft mode
ESC - 1	Underline On
ESC - 0	Underline Off
ESC E	Bold printing on
ESC F	Bold printing off
ESC 4	Italics on
ESC 5	Italics off
ESC 2	Set scrolling to 1/6 of an inch
ESC A <x>	Set scrolling to x/72 inches

For graphics mode:

ESC K	Enter graphics mode, 60dpi
ESC * 5	Enter graphics mode, 72dpi
ESC * 4	Enter graphics mode, 80dpi
ESC * 6	Enter graphics mode, 90dpi
ESC L	Enter graphics mode, 120dpi
ESC Z	Enter graphics mode, 240dpi
ESC A <x>	Set scrolling to x/72 inches
ESC 2	Set scrolling to 1/6 of an inch
ESC 3 <x>	Set scrolling to x/216 inches

### How do I modify the printer codes?

If you have the program ResEdit, you can modify the printer codes that the printer driver uses to print. There are two resource types that you can modify, ResEdit templates ('TMPL' resources) are included in the Printer Driver to allow you to easily modify the resources. First is the 'Pdcf' resource. It describes the Paper Size Definitions in the Page Setup Dialog, and it also describes the Printer Modes and what resolution they are for the Printer Mode option in the Print Dialog. Second is the 'Ptyp' resource. The 'Ptyp' resource tells the Printer Driver what codes to send to the printer.

### The 'Pdcf' Resource description

The 'Pdcf' Resource Has the following format:

Data type	ResEdit type	Description
short	OCNT	number of Print Mode definitions
	LSTC	
short	DWRD	text (0) or graphics (1) mode
short	DWRD	draft (0) or NLQ (1) mode if text mode
short	DWRD	the cpi if text mode
short	DWRD	horizontal resolution
short	DWRD	vertical resolution
char[]	ESTR	name of the print mode
	LSTE	



short	OCNT	Number of Page Size Definitions
	LSTC	
boolean	BOOL	set if next description is in metric
long	DLNG	Width in thousand's of a cm for metric and thousand's of an inch for non-metric
long	DLNG	Height in thousand's of a cm for metric and thousand's of an inch for non-metric
long	DLNG	Left border (same scale as above)
long	DLNG	Right border (same scale as above)
long	DLNG	Top border (same scale as above)
long	DLNG	Bottom border (same scale as above)
char []	ESTR	Name of the page size
	LSTE	

'Pdcf' number 0 is the one that is currently being used by the printer. From the chooser setup you can choose which of these resources is number 0. The pop-up menu called "Dialog setup" is made from the names of the 'Pdcf' resources, so it is important to name any new 'Pdcf's that you make.

### The 'Ptyp' Resource description

The 'Ptyp' resource has the following format:

<u>Data type</u>	<u>ResEdit type</u>	<u>Description</u>
char []	ESTR	Name of Printer Type
short	OCNT	Number of Text Commands
	LSTC	
short	DWRD	Text Command, one of: 0 - Set NQL Mode 1 - Set Draft Mode 2 - Underline On 3 - Underline Off 4 - Bold On 5 - Bold Off 6 - Italics On 7 - Italics Off 8 - Reset 9 - Graphics End
char []	ESTR	Text Command Code
	LSTE	
short	OCNT	Number of Scroll Commands
	LSTC	
short	DWRD	Scroll Resolution in fractions of an inch (i.e. To scroll x/72 this number would be 72)
short	DWRD	Scroll Type, one of: 0 - Scroll Immediately, variable amount (i.e. scroll x/216) 1 - Set Line Feed, fixed amount (i.e. set line-feed to scroll 1/6) 2 - Set Line Feed, variable amount (i.e. set line-feed to scroll x/72)
char []	ESTR	Scroll Command Code
	LSTE	
short	OCNT	Number of Printhead modes
	LSTC	
short	DWRD	Number of pins in this printhead-mode, one of: 6 - for 9-pin printers with Qume/Sprint type codes 7 - for 9-pin printers with Okidata type codes 8 - for 9-pin printers with Epson/IBM type codes 24 - for 24-pin printers with Epson/IBM type codes
short	DWRD	Distance between each pin on the print head in fractions of an inch. Usually:

		72 - for 9-pin printers (1/72 inch) 60 - for 24-pin printers w/8 pins printing (1/60 in.) 180 - for 24-pin printers w/24 pins printing
short	OCNT	Number of Horizontal Resolutions for this Printhead mode
	LSTC	
short	DWRD	Horizontal Resolution in fractions of an inch.
char []	ESTR	Graphics Printing Code
	LSTE	
	LSTE	

'Ptyp' number 0 is the one that is currently being used by the printer. From the chooser setup you can choose which of these resources is number 0. The pop-up menu called "Printer type" is made from the names of the 'Ptyp' resources, so it is important to name any new 'Ptyp's that you make. For the code strings you can place control characters in as a caret character (^) followed by a second character. That second character is ANDed with hex 1F to get the control character. (i.e. "^A" is interpreted as \$01, "^J" is interpreted as \$0A). To put a caret character (^) in the control string, you must put two caret characters (i.e. "^^").

Table of escape codesName	Dec	Hex	Code
NULL	0	00	^@
SOH	1	01	^A
STX	2	02	^B
ETX	3	03	^C
EOT	4	04	^D
ENQ	5	05	^E
ACK	6	06	^F
BEL	7	07	^G
BS	8	08	^H
HT	9	09	^I
LF	10	0A	^J
VT	11	0B	^K
FF	12	0C	^L
CR	13	0D	^M
SO	14	0E	^N
SI	15	0F	^O
DLE	16	10	^P
DC1	17	11	^Q
DC2	18	12	^R
DC3	19	13	^S
DC4	20	14	^T
NAK	21	15	^U
SYN	22	16	^V
ETB	23	17	^W
CAN	24	18	^X
EM	25	19	^Y
SUB	26	1A	^Z
ESC	27	1B	^[
FS	28	1C	^\
GS	29	1D	^]

RS	30	1E	^>
US	31	1F	^?

### The 'PSET' 0 Resource description

This contains information about the serial port to open up, as set by the Chooser Code. It is written to whenever you leave the Setup dialog in the chooser with the response of OK. The structure of this resource is:

```
typedef struct {  
    short doBackground;  
    SerShk    Handshake;  
    short serConfig;  
    char      deviceName[20];  
} mySetup;
```

NB: if the user wishes to set the deviceName to something other than .AOut or .BOut, they can, as long as the other device can also receive the same serial setup commands that .AOut and .BOut can.

### The 'STR' Resources

Resource Number	Function
-8191	Spool File Temporary Name
-8190	Raw Data Output File Name
-8189	Name of Spooler Application

### Version History

#### New in version 0.2.0

- Page size is now completely adjustable by the user.
- There is a 'Copies' option in the Job dialog now, but it only works for Graphics printing modes.
- Now responds partially to PrGeneral call. Some applications required PrGeneral to exist for them to print properly.
- Dialogs come up a bit cleaner. (There was some flashing before as it would set options and center the dialog.)
- Slightly more robust performance in low memory situations.
- Bug fixed where output was not scaled properly for graphics printing.
- System 7 balloon help for the dialogs.

#### New in version 1.0.0

- Dialogs are configurable from ResEdit.
- Printer Codes are configurable from ResEdit.
- More Robust.
- Wordy error messages, not just numbers.
- Color Icons.
- Landscape printing mode.

- Fixed command-period cancel bug.
- Fixed Xon-Xoff flow control bug.
- Dialogs pay attention to escape key as cancel.

#### **New in version 1.1.0**

- Further Fixes to command-period canceling.
- Ability to print to a file.
- Even more robust.
- Background printing with Print Spooler Application under Multifinder or System 7.
- Fixed Problem with printing from applications on a locked volume.
- Fixed Problem with printing justified text. (It was scaled improperly before)
- Fixed Problem with system 7 help balloons in the Chooser Dialog.
- Fixed Problem with b&w icons in dialogs on systems running Color QD in 2 color mode.

#### **New in version 1.2.0**

- Fixed a bug that would cause crashes and other problems on some machines, sometimes only in 32-bit mode.
- Fixed a problem with upgrading from previous versions to version 1.1.0 and later with some applications (like Microsoft Word).
- Fixed a problem with displaying the proper icons in the about box to the printer spooler application while printing.
- More dot matrix printers supported than ever before! Included are Qume/Sprint printers, and many more!
- Scaling.
- Special Effects like Page flip horizontal and vertical.
- Fixed problem where print to file had garbage on the end of it from the last print.
- Text printing works better with printers that have no escape codes.
- Text printing is now spooled.
- Copies now works now with text printing mode.
- Option added to turn on and off text rescaling.
- Dialogs reorganized and made more flexible to configure.

#### **New in version 1.2.1**

- Fixed a problem with dialogs not always being drawn.
- Fixed a problem with old version of WriteNow (version 2.0) that caused it to crash when doing the printing dialogs. (This may have caused other programs to crash when doing Printing dialogs too.)
- Fixed a problem with old version of Microsoft Works that caused it to crash when doing the printing dialogs. (I hope the programmers of Microsoft Works have learned to properly patch the printing dialogs by now!)

#### **New in version 1.2.2**

- Eeek! 1.2.1 had a bug that fixed the serial port to 57600 8N1, and messing with the controls in the Setup dialog had no effect!
- Fixed the help balloons for the pop-up menus in the dialogs.

**New in version 1.3.0**

- Fixed a bug with the width of bitmaps being 90% of their proper width. (Like printing the desktop from the finder.)



- Color printing! Yes, color printing, it's just the basic 8 original Quickdraw colors, but it does look cool and flashy in the middle of a document.
- Support for HP LaserJet compatible printers! Printers should be HPGL level IV or higher, and should really have at least 1.5Meg of memory to print fully covered 300dpi pages.
- Setting for IBM Color Graphics Printer and the IBM Color Jetprinter.
- Fixed problem with Draft/NLQ Text printing that caused the text to be scrambled all over the page when there was graphics on the page as well.
- Fixed a problem that didn't allow Claris applications to print at the high resolution that they wanted to be printing at.

New in version 1.4.0

- Full color and greyscale printing.
- Support for color DeskJet printers.
- Draft/NLQ Text printing is now spooled.

### **What does the future hold?**

Mid 93, Apple is released the Quickdraw GX with system 7.5, an extension to quickdraw that has a completely new printing manager. (It's about time they rewrote it, the old version is pretty ugly.) (NB: Quickdraw GX only works with Power PC's and Mac's with a 68020 or better!) The new printing manager supports easier writing of printer drivers. I will continue to support my printer driver, and plan to release a Quickdraw GX version soon.

Things I might add in the future to the printer driver:

- Support for more types of printers. (Like other dot matrix printers, and any thing else that I might hear about.)
- Network support for AppleTalk and Ethernet lpr protocol.
- Built in nice editor for its own resources. (So you don't have to use ResEdit.)

### **Where can I get source code for Chuck's Printer Driver?**

At the moment, I do not give out the source code to my printer driver, nor do I plan to in the future. If you want new features added or bugs fixed you have to contact me. If you wish to write your own printer driver, please read the referenced material. I also have a small fee for companies that wish to sell my printer driver with their printers.

### **References**

DTS (Apple Developer Technical Support) document 'Learning to Drive' and 'STD File Saver' source code, available on Developer's Essentials CD's (and also possibly [ftp.apple.com](http://ftp.apple.com), but I haven't checked)

Also the HP Deskjet sources in C. It used to be found at [mac-archive.umisc.edu](http://mac-archive.umisc.edu) anonymous ftp site.

## **Other software I have written**

*Serial Mouse Driver 1.0.1* - A control panel/extension that allows you to use some IBM compatible serial mice (or trackballs) with your Macintosh (as long as you have a free serial port!).