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Appendix A: WordPerfect .SET File Packets

The information contained in the WP{WP}.SET file contains all the setup functions of the Shift-F1 function in WP5.0/5.1. The format of the .SET file prefix and packets are listed below. The structure of each of the packets follows the packet list.

The 16-byte prefix header for .SET files:

Field	Size	Meaning
WPCorp File ID	4 bytes	␣1, "WPC"
Start of Document		Double word Pointer to end of file
Product Type	1 byte	1
File Type	1 byte	11h
Major Version #	1 byte	1 for WP5.1 (0 for WP5.0)
Minor Version #	1 byte	0
Encryption Key	1 word	0 = not encrypted
Reserved	1 word	0

The *special header index* is 10 bytes long and has the following structure:

Offset	Size	Usage
0	1 word	Packet type for header index (0FFFBh).
2	1 word	# of indexes (including header). For .SET files, this # is five, this index block header and 4 packets.
3	1 word	Size of index block (# of indexes * 10).
4	Double word	File position of next index block from beginning of prefix

Packets in the index block are also 10 bytes long and have the following structure:

Offset	Size	Usage
0	1 word	Packet type
2	Double word	Length of data packet
6	Double word	File position of packet's data

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Value	Packet Type
1h	Reserved
2h	Printer's default font name string
3h	PS table list (WP5.1 packet 5Dh)
4h	Font list (WP5.1 packet 57h)
5h	Reserved
6h	Font string pool (WP5.1 packet 59h)
7h-0Fh	Reserved

Value	Packet Type
10h	Dictionary/Thesaurus path names (WP5.1 packet 5Eh)
11h	Monitor attributes (WP5.1 packet 51h)
12h	Miscellaneous (changeable only in Setup) (WP5.1 packet 52h)
13h	Control and Alt key mapping (WP5.1 packet 53h)
14h	Document initial codes (WP5.1 packet 5Ah)
15h	Reserved
16h	Reserved
17h	Miscellaneous (saved only at end of Setup) (WP5.1 packet 55h)
18h	Reserved
19h	Reserved
1Ah	Default printer, old (WP5.1 packet 54h)
1Bh	Selected printers, old (WP5.1 packet 5Ch)
1Ch	Print options (WP5.1 packet 56h)
1Dh	Default printer (WP5.1 packet 54h)
1Eh	Selected printer list (WP5.1 packet 5Ch)

WordPerfect 5.1 Screen Attribute Packets

Value	Packet Type
20h	MONO
21h	CGA
22h	PC3270
23h	EGA (Italics)
24h	EGA (Underline)
25h	EGA (Small caps)
26h	EGA (Reserved)
27h	EGA (Reserved)
28h	EGA (Reserved)
29h	EGA (Reserved)
2Ah	HRF (12 fonts)
2Bh	HRF (6 fonts)
2Ch	HRF (Reserved)
2Dh	HRF (Reserved)
2Eh	HRF (Reserved)
2Fh	HRF (Reserved)
30h	NEC PC-9801

Miscellaneous Set Packets for 5.1

Value	Packet Type
50h	Reserved
51h	Monitor attributes
52h	Miscellaneous (cclim, sbeep, bktime, etc.)
53h	Control and Alt key mapping

Value	Packet Type
54h	Default printer
55h	Miscellaneous (saved only at end of Setup)
56h	Print options
57h	Font list
58h	Serial/license #
59h	Font string pool
5Ah	Document initial codes WP5.1
5Bh	Reserved
5Ch	Selected printers
5Dh	PS table list
5Eh	Auxiliary path names

Packet 02h — Printer's Default Font Name String (WP5.0)

This packet is a variable-length, null-terminated string. This string is the name of the current default printer's default font.

Packets 20h to 30h — Screen Attributes

First, the hardware bits are masked off and saved. Second, WordPerfect searches the WP attributes to find the displayable attributes. If the WP attribute is not found, the default (last entry) is used. The hardware bits are then ORed back in (since they can be displayed without exception).

Attributes for Document Screen 1

Offset	Size	Meaning
0	1 byte	# of entries in Attribute Table
1	150 bytes	Attribute Table
		(Byte) (Double Word)
		Displayable WP attributes (see format below)
	
	
	

Note: *The last ten entries of the table are reserved.*

151	1 word	Hardware low word mask used to mark if hardware can perform attributes.
153	1 word	Hardware high word mask (see hardware low word).

Attributes for Document Screen 2

Offset	Size	Meaning
155	1 byte	# of entries in Attribute Table
156	150 bytes	Attribute Table (Byte) (Double Word) Displayable WP attributes attributes (see format below)
	
	
	

Note: *The last ten entries of the table are reserved.*

307	1 word	Hardware low word mask used to mark if hardware can perform attributes.
309	1 word	Hardware high word mask (see hardware low word).

The WP Attribute Format
First Word of Text Attributes

Bit Set	Meaning
0	Chapter heading
1	Heading
2	Subheading
3	Small print
4	Fine print
5	Superscript
6	Subscript
7	Outline
8	Italics
9	Shadow
10	Redline
11	Double underline
12	Bold
13	Strikeout
14	Underline
15	Small caps

Second Word, First Byte of Text Attributes

Bit Set	Meaning
0	Blink
1	Reverse video
Bits 2–7	Reserved

Second Word, First Byte of Text Attributes (attributes that imply a point size change)

Value	Meaning
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01111111b Size

Packet Type 50h — Reserved

Packet Type 51h — Monitor Attributes (Packet 11h in WP5.0)

This fixed-length packet contains miscellaneous information about the display monitor:

Offset	Size	Meaning
0	1 byte	EGA font index (see Setup/Colors in <i>WordPerfect Reference</i>) 0FFh = Normal font only 00h = Italics font 01h = Underline font 02h = Small caps font 03h = 512 character font
1	1 byte	Hercules Graphics card index 00h = 6-character font 01h = 12-character font
2	1 byte	Hercules InColor card foreground color
3	1 byte	Hercules InColor card background color
4	1 byte	Hercules InColor card cursor color
5	1 byte	Hercules InColor card underline color
6	1 byte	Hercules InColor card strikeout color
7	1 byte	Hercules InColor card high intensity color
8	1 byte	Fast text option 00h = Slower text for older video cards to avoid “snow” on the screen 01h = Fast text for normal display

Packet Type 52h — Miscellaneous (changeable only in Setup) (Packet 12h in WP5.0)

Miscellaneous default variables (changeable only in Setup). This fixed-length packet contains miscellaneous initialization information that can only be modified with Setup.

Offset	Size	Meaning
0	1 byte	Beep flag bit 0 = beep on search failure (1 = y) bit 1 = beep on error (1 = y) bit 2 = beep on hyphenation (1 = y) bit 3 = column display mode (0 = side-by-side) bit 4 = display comments (1 = y) (default = ON) bit 5 = display summary (default = OFF) bit 6 = unused bit 7 = auto enter doc info when file is saved (1 = y)

Offset	Size	Meaning
1	1 word	Hard return character
3	1 byte	Display filename flag bit 0 = display filename (1 = y)
4	1 word	Time between backups (high=hours, low=minutes)
6	1 byte	Backup flag bit 0 = original document backup (1 = y) bit 1 = timed backup active (1 = y)
7	1 byte	Flag for auto reformat bit 0 = enable bit 1 = needed bit 2 = auto format in progress bit 3 = need to reset top of display
8	1 byte	Graphics driver type 0 = None or text 1 = Hercules 2 = CGA 3 = EGA (co40, co80) 4 = EGA (mono) 5 = EGA (Hi Res 4-color) 6 = EGA (Hi Res 16-color) 7 = VGA (16-color) 8 = VGA (mono) 99 = Any other screen driver (nonresident) contains the path/filename for the driver
9	1 byte	Default unit for conversion routines
10	1 byte	Horizontal position unit (status line)
11	1 byte	Vertical position unit (status line)
12	1 byte	Mnemonic menu selection attribute (bold)
13	1 byte	Keyboard speedup value (1-5, 0 = normal)
14	1 byte	Sys file flags (1 = y) bit 0 = fast save flag bit 1 = format retrieved docs for default printer <i>added for WP5.1</i> bit 2 = merge codes display in document <i>added for WP5.1</i> bit 3 = alternate keyboard <i>added for WP5.1</i>
15	20 bytes	Document summary subject search string
35	1 word	Graphics driver type 0 = mono, 1 = color
37	36 bytes	Reserved for graphics driver info
73	21 bytes	Default document type that is used during document management
94	13 bytes	Graphics driver filename
107	1 byte	Main menu index

Offset	Size	Meaning
108	1 byte	Second menu index
109	1 word	Graphic driver parameter: 1 byte mode, 1 byte ID

Text Driver Packet Definitions — Packet 52h in .SET File

Offset	Size	Meaning
111	34 bytes	Current menu string
145	13 bytes	Filename
158	1 byte	Main menu index
159	1 byte	Second menu index
160	1 word	Text driver parameter: 1 byte mode, 1 byte ID
162	12 bytes	Unused
174	1 byte	Current view mode and preview flags for print preview bits 0–2 view mode (see flags in WPWDEF.INC) bit 3 = 1 if we want to show positive of page bit 4 = available bit 5 = 1 if “view graphics in black and white” = Yes in Setup bit 6 = 1 graphics menu bold as color bit 7 = 1 if “view doc in black on white” = Yes in Setup
175	1 byte	Mouse menu mnemonic attribute
176	1 byte	Mouse menu text attribute
177	1 byte	Menu bar mnemonic attribute
178	1 byte	Menu bar text attribute
179	1 byte	Menu bar separator, 1 = Yes bit 0 = division line selected bit 1 = remain visible
180	1 byte	Type of mouse (BUS, SERIAL, NEITHER)
181	1 byte	Default mouse port (COM1)
182	1 byte	Unused
183	1 word	Mouse acceleration factor—1200ths (.025p = 30)
185	1 word	Mouse submenu delay time (3 per .05 seconds)
187	1 byte	Options flag bits 0–1 Hyphenation: 1 never prompt 2 prompt when required 3 always prompt bit 2 available bit 3 available bit 4 = 1 if “create doc summary on save/exit” = Yes bit 5 = 1 if “document management” = Yes bit 6 = 0 if dictionary, 1 if algorithm hyphenation

Offset	Size	Meaning
188	1 byte	Align_center+(pos_mid SHL 3) Equation options bits 0–2 equation horizontal alignment 0 left aligned 1 right aligned 2 center aligned bits 3–5 equation vertical alignment 1 top aligned 2 center aligned 3 bottom aligned bit 6 available bit 7 = 1 print equation as text
189	1 word	Mouse double click time (14 * .05 seconds = .7 sec)
191	1 byte	Alt key selects pull down menus: = 0 Alt key does not select menus = 1 Alt key selects menus
192	1 byte	= 0 not using left-handed mouse = 1 using left-handed mouse
193	1 word	Equation base font size (0 = default)
195	1 byte	ID (file position) of mouse
196	13 bytes	Filename
209	45 bytes	Reserved for mouse driver information

Note: *The following is unique to WPMWin 5.1.*

254	1 byte	Preferences Environment flags bit 0 = 1 if Confirm on Code Deletion is on bit 1 = 1 if Auto Code Placement is on bit 2 = 1 if Ruler — Show Ruler Guides is on bit 3 = 1 if Ruler — Snap to Ruler Grid is on bit 4 = 1 if Display Last Open Files is on bit 5 = 1 if Allow Undo is on bit 6 = 1 if Ruler Buttons on Top is on bit 7 = 1 if Show Ruler in Document is on
255	1 byte	Preferences Display flags bit 0 = 1 if Vertical Scrollbar Display is on bit 1 = 1 if Horizontal Scrollbar Display is on bit 2 = 1 if Graphics is on (in View menu) bit 3 = 1 if Text in Windows System Colors in on bit 4 Reserved bit 5 = 1 if Status line display is on

Offset	Size	Meaning
256	1 word	Print Preview flags bit 0 = 1 if no view defined bit 1 = 1 if 100% bit 2 = 1 if 200% bit 3 = 1 if Entire Doc. bit 4 = 1 if Zoom to Full Width bit 5 = 1 if Zoom Area bit 6 = 1 if Facing Pages bit 7 = 1 if 1 pg bit 8 = 1 if 2 pg bits 9-15 Reserved
258	1 word	Print Preview X origin Designates the window origin at the time the user exited print preview, only if he was in a zoom mode at the time. Otherwise it is zero.
260	1 word	Print Preview Y origin

Packet Type 53h — Control and ALT Key Mapping (Packet 13h in WP5.0)

Keyboard Filenames

This fixed-length packet contains the null-terminated filename of the startup keyboard definition file:

Offset	Size	Meaning
0	13 bytes dup(0),0	Keyboard name
14	13 bytes dup(0),0	Equation keyboard name

Packet Type 54h — Default Printer (Packets 1Ah and 1Dh for WP5.0)

This fixed-length packet contains information about the default printer. The structure is outlined below:

Offset	Size	Meaning
0	37 bytes	Long name of .PRS file
37	13 bytes	Actual .PRS filename
50	27 bytes	Descriptor for initial font (see packet 0Fh for format)
77	1 word	Minimum top margin
79	1 word	Minimum bottom margin
81	1 word	Minimum left margin
83	1 word	Minimum right margin
85	1 byte	Flags
86	1 byte	Port # (value = FFh if a file/path, or network print queue is used.)
87	1 byte	Byte to initialize serial port
88	1 byte	Network printer flag
89	1 byte	Network form #

Offset	Size	Meaning
90	80 bytes	Full pathname for non-port device
170	67 bytes	Pathname only—for auxiliary printer files
237	1 word	Date
239	1 word	Time

Note: In WP5.0 packet 1Ah/1Dh, the last three bytes of the 5.1 “font descriptor” do not exist. See offset 50. The “point size” word and the “type face definition flags” byte fields did not exist in the WP5.0 “font descriptor” field of 1Ah/1Dh. This makes 1Ah/1Dh shorter by three bytes.

Packet Type 55h — Miscellaneous (saved only at end of Setup) (Packet 17h for WP5.0)

This fixed-length packet contains miscellaneous default variables for initialization information that can be entered with Setup, or from outside Setup.

Offset	Size	Meaning
0	1 word (8)	“N,” use in counting for cursor movement
2	1 byte (12h)	Table of authorities def byte bit 0 = permit underlining (1 = y) bit 1 = dot leader (1 = y) bit 4 = blank line between authorities (1 = y)
3	64 bytes	String for date display style
67	1 byte	Fill byte (End of WP5.0 packet)

Added for WP5.1:

68	1 byte	Fill byte
69	1 byte (20h)	Wysiwyg editing flag <i>added for WPWin 5.1</i> bits 1,0 = 0 text; = 1 graphics; = 2 wysiwyg bit 2 = 1 if doing wysiwyg display justification bit 3 = 1 if doing wysiwyg display graphics bit 4,5 = cursor height (0=full; 1=1 pixel; 2=2)
70	1 word (256)	Wysiwyg horizontal scale factor (256 = 100%) <i>added for</i>
<i>WPWin 5.1</i>		
72	1 word (256)	Wysiwyg vertical scale factor (256 = 100%) <i>added for</i>
<i>WPWin 5.1</i>		
74	20 bytes	Merge—begin record delimiter
94	20 bytes	Merge—end record delimiter (13)
114	20 bytes	Merge—begin field delimiter
134	20 bytes	Merge—end field delimiter (“,”)
154	20 bytes	Merge—characters to be removed
174	1 word	Reveal Codes window size

Packet Type 56h — Print Options (Packet 1Ch for WP5.0)

Print Options Information

Offset	Size	Meaning
0	1 word	# of copies (1)
2	1 word	Binding width (0)
4	1 byte	Network—form # to use (0–31)
5	1 byte	Network banners printed? (0 = no)
6	1 byte	Document flags (0)
7	1 byte	23h
8	1 word	Redline character (“|”)
10	1 byte	Print to file (0 = no) (End of WP5.0 packet) Print flags <i>added for WPWin 5.1</i> 01h — no banding for windows printing 02h — feh not used

Added for WP5.1:

11	1 word	200%—extra large
13	1 word	150%—very large
15	1 word	120%—large
17	1 word	80%—small
19	1 word	60%—fine
21	1 word	60%—sup/sub (default same as fine)

Packet Type 57h — Font List (Packet 04h in WP5.0)

This packet has the same format as Packet Type 15 (0xF) of the document file format (see the *WordPerfect* section for more information) except that it contains only the default printer font.

Packet Type 58h — Serial License Number

Packet Type 59h — Font String (Packet 02h in WP5.0)

This packet has the same format as Packet Type 07h of the document file format (see the *WordPerfect* section for more information) except that it contains only the default printer font name.

Packet Type 5Ah — System Initial Codes (Packet 14h in WP5.0)

This variable-length packet is identical to the “Document Initial Codes” packet in the WP5.1 document prefix. It contains function codes as they appear inside a document. This packet is copied to the document setup codes when a new document is created and provides a way to keep the document format consistent between different environments.

Packet Type 5Bh — Reserved

Packet Type 5Ch — Selected Printers List (Packet 1Bh and 1Eh in WP5.0)

This variable-length packet contains the information for all the printers that the user added to the selection list. The format of this packet is a list of fixed-length records of the same structure as

packet type 54h, with the exception that it has one 54h formatted entry for each printer on the selection list. The date and time fields are not included in the 5Ch packet entries. Also, each 54h formatted entry in the list does not include the “Date” and “Time” fields.

Packet Type 5Dh — PS Table List

Packet Type 5Eh — Auxiliary Pathnames (Packet 10h for WP5.0)

This fixed-length packet contains the information for the auxiliary pathnames on the Setup key. These fields are fixed length, null terminated and are of the size indicated (pthlen = 67, fnlen = 80).

Offset	Size	Meaning
0	1 word	Length of pathname for printer files
2	67 bytes (0)	Pathname for WP printer files (.PRS and .ALL)
69	1 word	Length of pathname for dictionary/thesaurus/hyphenation
71	67 bytes (0)	Pathname for dictionary/thesaurus/hyphenation
138	1 word	Length of pathname for supplement dictionary
140	67 bytes (0)	Pathname for supplement dictionary
207	1 word	Length of pathname for backup path
209	67 bytes (0)	Pathname for backup path

Note: *In the 10h (WP5.0) packet, both backup fields are used for the thesaurus length and path.*

276	1 word	Length of style file pathname
278	80 bytes (0)	Path/filename for style file

Note: *In the 10h (WP5.0) packet, both style fields are used for the backup length and path.*

358	1 word	Length of pathname for macros
360	67 bytes (0)	Pathname for macros

Note: *In the 10h (WP5.0) packet, both macro fields are used for the hyphenation dictionary length and path.*

427	1 word	Length of pathname for graphics
429	67 bytes (0)	Pathname for graphics

Note: *In the 10h (WP5.0) packet, both graphics fields are used for the styles length and path.*

496	1 word	Length of pathname for documents
498	67 bytes (0)	Pathname for documents

Note: *In the 10h (WP5.0) packet, both document fields are used for the key/macro length and path.*

Added for WP5.1

Offset	Size	Meaning
565	1 word	Length of pathname for styles

567	67 bytes (0)	Pathname for styles
634	1 word	Length of pathname for spreadsheet files
636	67 bytes (0)	Pathname for spreadsheet files

Appendix B: .WPK Keyboard Macro File Formats

The 16-byte prefix header for .WPK files:

Field	Size	Value for WP5.1 Document
WPCorp File ID	4 bytes	␣1, "WPC"
Start of Document	Double word	File position of start of macro
Product Type	1 byte	1h
File Type	1 byte	3h
Major Version #	1 byte	1h for WP5.1 (0 for WP5.0 .WPK files)
Minor Version #	1 byte	1h for WP5.1 (0 for WP5.0 .WPK files)
Encryption Key	1 word	0h = not encrypted
Reserved	1 word	0h

The *special header index* is 10 bytes long and has the following structure:

Offset	Size	Usage
0	1 word	Packet type for header index (0FFFBh).
2	1 word	# of indexes (including header). For .WPK files, this # is five, the first four being currently used.
4	1 word	Size of index block (# of indexes * 10).
6	Double word	File position of next index block from beginning of prefix (zero since only one index is needed in a .WPK file).

Other indexes in the index block are also 10 bytes long and have the following structure (the first three indexes following the special header index are currently used in .WPK macros):

Offset	Size	Usage
0	1 word	Packet type
2	Double word	Length of data packet
6	Double word	File position of data type

Packet Type 1:

Single key definitions or tags for multiple keystrokes that contains a hex dump of the key map for all keys.

Note: "Single keystroke definitions" are the new definition. Multiple keystroke definitions have a high byte of "FDh," and the low byte is the number of the multiple keystroke macro.

Packet Type 2:

Multiple keystroke definitions

First byte = # of multiple keystroke definitions

<Macro #> [Len] {Definition}

Macro #—byte—index into macro table

Len—word—# bytes in macro definition

Macro definition—4K max so you can edit them in WordPerfect

Keyboard Macro Commands Usable in Macro Definition

Note: *Packet Type 3 is only used by WordPerfect to edit keyboard macros and to map file macros to a keyboard macro and vice versa. If the index to Packet 3 is nulled out in the file prefix, keyboard macros will execute, but are not editable in WordPerfect. Nulling out the index to Packet 3 can offer some protection to keyboard macros.*

Packet Type 3:

Key Definitions

[Key] [Map Offset] <Desc Length> {Description}

Key—word—key, as defined from IBM keyboard

Map offset—word—offset into keyboard map (Data Packet 1)

Desc Length—byte—does include null at end of description

Description—string—40 characters (includes null at end)

Note: *If the actual description length is less than 40 characters, fill characters are used to fill the remainder of the 40-character description string. Therefore, the description string is always 40 characters long.*

Appendix C: Screen Font Files

Introduction

Special files are included with WordPerfect 5.1 to let you display more than 256 characters during normal text mode editing when one of the following screens is present:

- EGA (14 points)
- VGA (16 points)
- Hercules Graphics Card Plus
- Hercules InColor Card

There are more than 1500 characters in the WordPerfect master character set (see the *WordPerfect Reference* manual). Obviously, not all these characters can appear at once on a text screen designed to display 256 or 512 characters. The display adapters listed above let you display 512 or more characters. WordPerfect uses this capability to display additional characters beyond the normal 256 IBM ASCII characters, or to display the first 256 characters in a different attribute.

Note: *In 10/90, WPCorp made available the WordPerfect Screen Font Editor for Text Screen Characters. This product lets you select the characters you want to display from WPCorp character sets in WordPerfect and PlanPerfect text screens. To purchase this product, call (800) 321-4566.*

Setup (Shift-F1) contains several menus and options that you can use to display various combinations of characters or attributes on these display adapters. This subsection documents the format of the special files used to implement those characters and attributes. It also describes how to modify them or create new files to display a different set of characters on the screen while WordPerfect is running.

These special character sets and their files apply only to the text mode display listed above. The View Document feature in WordPerfect uses graphics mode and can display all characters that the currently-selected printer supports.

Screen Fonts for EGA and VGA

The IBM EGA, IBM VGA, and compatible display adapters let you display as many as two fonts of 256 characters each. The first set of 256 characters displays the standard IBM ASCII characters. Setup lists several different options for using the second set of 256 characters:

 p Underlined versions of the first 256 characters can be displayed by the second set of 256 characters. If you choose this option, the EGAUND.FRS file (VGAUND.FRS for VGA) is loaded into font memory and true underlining is available on the EGA or VGA screen.

 p *Italicized* versions of the first 256 characters can be displayed by the second set of 256 characters. If you choose this option, the EGAITAL.FRS file (VGAITAL.FRS for VGA) is

loaded into font memory and italicized text can appear in text mode.

⌋ SMALL CAPS versions of the first 256 characters can be displayed by the second set of 256 characters. If you choose this option, the EGASMC.FRS file (VGASMC.FRS for VGA) is loaded into font memory and the small caps attribute can appear in text mode.

⌋ The second set of 256 characters can display an additional 256 characters, different from those in the first set. This lets you simultaneously display as many as 512 different characters in text mode. If you choose this option, the EGA512.FRS file (VGA512.FRS for VGA) is loaded into font memory. In addition, WordPerfect attempts to read the EGA512.CHM file (VGA512.CHM for VGA) that contains the character map for the additional 256 characters in EGA512.FRS. If the EGA512.CHM file is not found, the internal character map shipped with WordPerfect is used. The character map tells WordPerfect which of the more than 1500 possible characters are present in the second set of 256 characters.

To display a different set of 256 characters than those shipped in the EGA512.FRS file, redefine the EGA512.FRS file and create an EGA512.CHM file that contains a character map to the new characters.

The format of the EGA512.CHM file is as follows:

Offset	Size	Meaning
0	1 word	# of entries in the map
2	1 word	WordPerfect character # for entry 1 (high byte = set #, low byte = character #)
4	1 word	WordPerfect character # for entry 2
..
..
..	1 word	WordPerfect character # for entry N
..	1 word	Index of character to be displayed for entry 1
..	1 word	Index of character to be displayed for entry 2
..
..
..	1 word	Index of character to be displayed for entry N

The *index of character to be displayed* is the index (256..511) of the character in the second font in the display memory. The high byte is 1, and the low byte is the index (0..255) to the character in the display font memory.

Up to 300 entries can be defined in a character map in the EGA512.CHM file. This permits some duplication of characters. For example, you can use the same display font character to display both the Greek pi character and the Math pi character.

A sample assembly language source file for a character map named CHARMAP.ASM (source for EGA512.CHM) is included on the Toolkit diskette. It identifies the WordPerfect characters

that are mapped to screen fonts for EGA512.FRS. (The same characters are mapped in the second 256 characters of HRF6.FRS.) You can modify the sample .CHM source as needed to correspond to a new .FRS file that you might create. A batch file, CHM.BAT, is included to aid in creating the .CHM file from the assembly language source file.

The format of the EGA512.FRS file is as follows:

Offset	Size	Meaning
0	14 bytes (16 bytes for VGA)	Screen bitmap for character 0 in second font
14	14 bytes (16 bytes for VGA)	Screen bitmap for character 1 in second font
..
..

The 14 bytes correspond to 14 rows (16 rows for VGA, to make 9x16) of a 9x14 character cell. The ninth column of the character is assumed to be blank (or the eighth column is copied to the ninth column for certain Line Draw characters).

Screen Fonts for Hercules Cards

The Hercules Graphics Card Plus and the Hercules InColor Card permit the simultaneous display of up to 12 different screen fonts of 256 characters each. Setup lets you choose one of two options when a Hercules RamFont card is present:

 b Twelve fonts, 256 characters each. This option displays the normal 256 IBM ASCII characters in 12 different font styles or attributes: normal, double underline, italics, small caps, outline, subscript, superscript, fine print, small print, large print, very large print, and extra large print. The HRF12.FRS file contains these screen fonts and is loaded into the display memory.

 b Six fonts, 512 characters each. This option displays the normal 256 IBM ASCII characters plus an additional 256 characters from the WordPerfect character set in six different font styles or attributes: normal, italics, superscript, subscript, double underline, and small print. The HRF6.FRS file contains these screen fonts and is loaded into the display memory.

For the second option, to change the characters displayed as the second set of 256, redefine the HRF6.FRS file and create an HRF6.CHM file that contains a character map for the additional characters.

The format of the HRF6.CHM file is the same as that described above the EGA/VGA screen fonts. The format of the HRF6.FRS file is slightly different:

Offset	Size	Meaning
0	16 bytes	Bitmap for character 1, normal
16	16 bytes	Bitmap for character 2, normal
..
..
..	16 bytes	Bitmap for character 512, normal

..	16 bytes	Bitmap for character 1, italics
..	16 bytes	Bitmap for character 2, italics
..
..
..	16 bytes	Bitmap for character 512, italics
..	16 bytes	Bitmap for character 1, superscript
..	16 bytes	Bitmap for character 2, superscript
..
..
..	16 bytes	Bitmap for character 512, superscript
..	16 bytes	Bitmap for character 1, subscript
..	16 bytes	Bitmap for character 2, subscript
..
..
..	16 bytes	Bitmap for character 512, subscript
..	16 bytes	Bitmap for character 1, double underline
..	16 bytes	Bitmap for character 2, double underline
..
..
..	16 bytes	Bitmap for character 512, double underline
..	16 bytes	Bitmap for character 1, small print
..	16 bytes	Bitmap for character 2, small print
..
..
..	16 bytes	Bitmap for character 512, small print

The 16 bytes for each character bitmap correspond to 16 rows of a 9x16 character cell. The ninth column is assumed to be blank (or copied from the eighth column for certain Line Draw characters). You can use the WordPerfect Screen Font Editor to edit or create the bitmaps for .FRS files.

Appendix D: General Font Terms

Appendix E: Hex Chart

[Note that some of the characters will not appear correctly in this representation.]

Hex Value	Screen Position	ASCII Character	Hex Value	Screen Position	ASCII Character	Hex Value	Screen Position	ASCII Character
01	1	þ	2F	47	/	5F	95	˘
02	2	þ	30	48	0	60	96	˙
03	3	þ	31	49	1	61	97	a
04	4	þ	32	50	2	62	98	b
05	5	þ	33	51	3	63	99	c
06	6	þ	34	52	4	64	100	d
07	7	þ	35	53	5	65	101	e
08	8	þ	36	54	6	66	102	f
09	9	þ	37	55	7	67	103	g
0A	10	þ	38	56	8	68	104	h
0B	11	þ	39	57	9	69	105	i
0C	12	þ	3A	58	:	6A	106	j
0D	13	þ	3B	59	;	6B	107	k
0E	14	þ	3C	60	<	6C	108	l
0F	15	þ	3D	61	=	6D	109	m
10	16	þ	3E	62	>	6E	110	n
11	17	þ	3F	63	?	6F	111	o
12	18	þ	40	64	@	70	112	p
13	19	þ	41	65	A	71	113	q
14	20	þ	42	66	B	72	114	r
15	21	þ	43	67	C	73	115	s
16	22	þ	44	68	D	74	116	t
17	23	þ	45	69	E	75	117	u
18	24	þ	46	70	F	76	118	v
19	25	þ	47	71	G	77	119	w
1A	26	þ	48	72	H	78	120	x
1B	27	þ	49	73	I	79	121	y
1C	28	þ	4A	74	J	7A	122	z
1D	29	þ	4B	75	K	7B	123	{
1E	30	þ	4C	76	L	7C	124	|
1F	31	þ	4D	77	M	7D	125	}
20	32	(space)	4E	78	N	7E	126	~
21	33	!	4F	79	O	7F	127	þ
22	34	"	50	80	P	80	128	Ç
23	35	#	51	81	Q	81	129	ü
24	36	\$	52	82	R	82	130	é
25	37	%	53	83	S	83	131	â
26	38	&	54	84	T	84	132	ä
27	39	'	55	85	U	85	133	à
28	40	(	56	86	V	86	134	â
29	41	)	57	87	W	87	135	ç
2A	42	*	58	88	X			
2B	43	+	59	89	Y			
2C	44	,	5A	90	Z			
2D	45	-	Hex Value	Screen Position	ASCII Character			
Hex Value	Screen Position	ASCII Character	5B	91	[
2E	46	.	5C	92	\			
			5D	93]			
			5E	94	^			

Hex Value	Screen Position	ASCII Character	Hex Value	Screen Position	ASCII Character	Hex Value	Screen Position	ASCII Character
			B0	176	þ	D8	216	þ
			B1	177	þ	D9	217	þ
88	136	ê	B2	178	þ	DA	218	þ
89	137	ë	B3	179	þ	DB	219	þ
8A	138	è	B4	180	þ	DC	220	þ
8B	139	ï	B5	181	þ	DD	221	þ
8C	140	î	B6	182	þ	DE	222	þ
8D	141	ì	B7	183	þ	DF	223	þ
8E	142	Ä	B8	184	þ	E0	224	þ
8F	143	Å	B9	185	þ	E1	225	ß
90	144	É	BA	186	þ	E2	226	þ
91	145	æ	Hex Value	Screen Position	ASCII Character	E3	227	þ
92	146	Æ	BB	187	þ	E4	228	þ
93	147	ô	BC	188	þ	E5	229	þ
94	148	ö	BD	189	þ	E6	230	µ
95	149	ò	BE	190	þ	E7	231	þ
96	150	û	BF	191	þ	E8	232	þ
97	151	ù	C0	192	þ	E9	233	þ
98	152	þ	C1	193	þ	EA	234	þ
99	153	Ö	C2	194	þ	EB	235	þ
9A	154	Ü	C3	195	þ	EC	236	þ
9B	155	ç	C4	196	þ	ED	237	þ
9C	156	£	C5	197	þ	Hex Value	Screen Position	ASCII Character
9D	157	¥	C6	198	þ	EE	238	þ
9E	158	þ	C7	199	þ	EF	239	þ
9F	159	f	C8	200	þ	F0	240	þ
A0	160	á	C9	201	þ	F1	241	±
A1	161	í	CA	202	þ	F2	242	þ
A2	162	ó	CB	203	þ	F3	243	þ
A3	163	ú	CC	204	þ	F4	244	þ
A4	164	ñ	CD	205	þ	F5	245	þ
A5	165	Ñ	CE	206	þ	F6	246	÷
A6	166	ª	CF	207	þ	F7	247	þ
A7	167	º	D0	208	þ	F8	248	þ
A8	168	¸	D1	209	þ	F9	249	þ
A9	169	þ	D2	210	þ	FA	250	·
AA	170	¬	D3	211	þ	FB	251	þ
AB	171	½	D4	212	þ	FC	252	þ
AC	172	¼	D5	213	þ	FD	253	²
AD	173	ì	D6	214	þ	FE	254	þ
AE	174	þ	D7	215	þ	FF	255	þ
AF	175	þ						

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