

# TAS-SIGN

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# 1. Introduction

TAS-SIGN produces large lettering in a variety of sizes and styles on dot matrix printers. The eye-catching nature of the output produced by TAS-SIGN makes the program particularly suitable for printing signs, notices, posters and banners.

TAS-SIGN runs under CP/M Plus on the CPC 6128 and PCW computers.

There are two essential procedures which you should carry out before you use the program to create your own signs:

- (1) Create a working TAS-SIGN disc and store the original in a safe place as a back-up copy.
- (2) Run the TAS-SIGN configuring program to specify information about your make and model of printer.

These procedures are described in sections 2 and 3.

Section 4 is a tutorial introduction to the use of the program. You should work through this section on your computer to gain an initial understanding of the uses, capabilities and operation of the program.

Sections 5 and 6 are reference sections which list and describe the TAS-SIGN commands. Refer to the commands in these sections while working through the tutorial of section 4. Section 5 describes the editor commands which are used to type in, and correct, the text that is to be printed on the sign. Section 6 describes how to control the appearance of the printed sign.

Section 7 describes restrictions concerning the use of the program and errors which may be reported.

## 1.1 Keyboard Layout

The CPC and PCW computers have different keyboard layouts and legends. The only differences which affect the use of TAS-SIGN are the keys marked CONTROL and ESC on the CPC and the keys marked ALT and STOP on the PCW.

The TAS-SIGN program detects whether it is running on a CPC or a PCW and displays messages which refer to the keys as they are marked on the keyboard.

In this manual the keys are referred to by their CPC legends CONTROL and ESC. PCW users should note that:

CONTROL = ALT  
ESC = STOP

PCW users should also note that the \ character is typed by holding down EXTRA and pressing the 1/2 key.

\ = EXTRA 1/2

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## 2. Creating a Working TAS-SIGN Disc

Work through the following steps to create your working TAS-SIGN disc. Reference is made to disc drives A and B. If you do not have a second disc drive then a message on the bottom line of the display prompts you to change discs at the required times.

Ensure that your original TAS-SIGN disc is write-protected. A disc is write-protected when the two plastic tabs on one edge of the disc are pushed in towards the body of the disc.

### 2.1 CPC 6128

(1) Load CPM Plus. Insert side 1 of the discs supplied with the computer and type:

| CPM

and press the RETURN key. (The | character is typed by holding down SHIFT and pressing the @ key)

(2) Type

DISCKIT

and press RETURN. Then follow the instructions that appear on the screen to copy your original TAS-SIGN disc from drive A onto another disc in drive B. If you have only one disc drive then the computer will keep prompting you to change discs when required.

You now have a working TAS-SIGN disc that only needs to be configured for your printer before the program can be used. Store the original disc in a safe place. If you damage your working copy you will then be able to create another one.

### 2.2 PCW 8256 and 8512

(1) Load CPM Plus. This is accomplished by turning the machine on and inserting side 2 of the discs supplied with the computer.

(2) Format a blank disc. Type:

DISCKIT

and press RETURN. Follow the instructions that appear on the screen to format a blank disc. When the format is complete follow the screen instruction to exit from the DISCKIT program.

(3) Remove the blank and formatted disc and re-insert your CPM Plus system disc.

(4) In the final step all the files are copied from your original TAS-SIGN disc onto the blank disc that has just been formatted. Ensure that your CPM Plus disc is in drive A and type:

Flr

and press the RETURN key. When the \* prompt appears remove the CPM Plus disc. If you have two disc drives put the original TAS-SIGN disc in drive B (the lower drive) and the formatted blank disc in drive A. If you have one drive then remember that the original TAS-SIGN disc is the disc for B and wait until the computer prompts you to insert it. Type:

A:=B:\*

and press RETURN. If you have only one drive then the computer will keep prompting you to change discs.

You now have a working TAS-SIGN disc that only needs to be configured for your printer before the program can be used. Store the original disc in a safe place. If you damage your working copy you will then be able to create another one.

### 3. Configuring TAS-SIGN

Before TAS-SIGN can be used it must be configured for the make and model of printer attached to the computer. This is done by running the configuring program which is supplied on the TAS-SIGN disc. The configuring program creates a data file called TSDAT which contains information about the specified printer. TAS-SIGN reads this data file every time that it is loaded. This configuring program is called TSCONFIG and it runs under CPM Plus.

To run the configuring program put your working TAS-SIGN disc into drive A. The disc must remain in the drive while the configuring program is being used. Type:

TSCONFIG

and press RETURN. The configuring program then loads and the screen shows the current printer configuration.

Press any key and the screen changes to display a list of printers. If your make and model of printer appears on the list then press the appropriate key and then the RETURN key to confirm your selection.

If your make and model of printer does not appear on the printer selection list then refer to Appendix 1.

When a printer has been selected the program accesses the disc to read the data for the printer.

The configuring program then asks whether your printer requires a carriage return and a linefeed at the end of each line or just a carriage return. Press A or B to choose the option which matches your printer. If in doubt then select option B. If you then get a double line spacing effect when you use TAS-SIGN then run the configuring program again and choose option A.

Reply by pressing N to the final question concerning the character translation table. The function of the character translation table is described in Appendix 2 and you may wish to read this when you have become more familiar with the program.

The configuring program then finishes by accessing the disc to write out the data for your specified printer.

The configuring program does not need to be run again unless you accidentally delete the TSDAT file, or if you change your printer, or if you wish to change the character translation table.

Once you have confirmed that you have configured TAS-SIGN successfully, by printing some of the example signs described in the next section, you can delete the configuring program files from your working copy of the program disc. This creates additional space on the disc to save signs. The configuring program files, which may be deleted once TAS-SIGN has been configured, are:

TSCONFIG.COM  
TSCONFIG.TXT  
TSCONFIG.DAT

To delete these files type the CPM command: ERA TSCONFIG.\*

### 4. A Tutorial Introduction

This section consists of tutorial examples. As you work through these examples on your computer you should refer to sections 5 and 6 in which the editing and layout commands are described in detail.

With the computer running CPM Plus, ensure that your working TAS-SIGN disc is in drive A and type:

TS

and press the RETURN key. This is the command that is used to load and run TAS-SIGN once CPM Plus has been loaded.

When the program has loaded the display shows the TAS-SIGN screen:

Font: STANDARD Orientation: landscape Stroke: single Penalty: single Resizing: off	Press CTRL 0 to change these Options...	Height: 39 Cap: 5 Order: 1 Stretch: 100 Matching: none
Height: 1 Cap: 1		
Height: 1 Cap: 1		
Height: 1 Cap: 1		
Height: 1 Cap: 1		
Height: 1 Cap: 1		
Totals: 1 Lines 1 Col: 1 Insert: off   O/P scroll help   ESC Print   TAS-SIGN (C)		

Do not remove the TAS-SIGN disc from the drive.

## 4.1 The First Sign

Type the word:

Hello

so that the top part of the screen appears as shown below if you make a typing mistake then use the cursor keys and/or the delete keys to correct your typing.

Font: STANDARD	Height: 99
Orientation: landscape	Cap: 3
Strike: single	Border: 100
Density: single	Stretch: none
Resizing: off	Matching: none
Press CTRL O to change these Options.	
Height: Hello	
Cap:	
Height:	
Cap:	

Now press the ESC key to print the sign:

HELLO

The disc drive is accessed while the text is being printed. This is because the information describing each character shape is held on the TAS-SIGN disc. For this reason the TAS-SIGN disc must always remain in the drive while the program is being used.

## 4.2 Changing the font

The area at the top of the screen shows a set of options that controls the appearance of the printed sign. The message at the top left of the options area shows that the first sign was printed in the font called Standard. A font is a style of lettering. The object of this exercise is to print the 'Hello' sign again in a different font.

Hold down CONTROL and press the letter O key. Such a keypress is in future referred to as CONTROL O. This particular keypress is used to change the options shown at the top of the screen.

If you have pressed CONTROL O the current font is now shown highlighted:

Font: WESTERN	Height: 99
Orientation: landscape	Cap: 5
Strike: single	Border: 100
Density: single	Stretch: none
Resizing: off	Matching: none
Press CTRL O to change these Options.	
Height: Hello	
Cap:	
Height:	
Cap:	

Pressing the space bar changes the highlighted option. Keep pressing the space bar to see the names of all the available fonts. Then use the space bar to select the font called Western. Finally, press RETURN to finish changing the options.

Font: WESTERN	Height: 99
Orientation: landscape	Cap: 999
Strike: single	Border: 0
Density: single	Stretch: 100
Resizing: off	Matching: none
Press CTRL O to change these Options.	
Height: Hello	
Cap:	
Height:	
Cap:	

Now press ESC to print the sign in the Western font:

HELLO

## 4.3 Changing the Orientation

The second item in the left column of the Options area of the screen shows that the two signs you have printed have been in landscape orientation. Landscape orientation means printing along the "width" of the paper. The object of this exercise is to print the sign in portrait orientation which means across the width of the paper.

Press CONTROL O to change the options. Press the down arrow cursor key to highlight the orientation option. Then press the space bar to change the orientation from landscape to portrait. Finally, press RETURN to finish changing the options.

Now press ESC to print the sign again, this time in portrait orientation.

#### 4.4 Changing the Character Height

Press CONTROL O again to change the options and use the cursor keys and the space bar to make the following changes:

- (1) Change the orientation back to portrait;
- (2) Select the font of your choice;
- (3) Change the height option at the top right hand corner to 400. Accomplish this by highlighting the option and pressing the space bar. Then type the required number, 400, and press RETURN.

Press RETURN again to finish changing the options and then press ESC to print the sign with the new height.

The unit of height is the size of a dot printed by a single pin in the print head of your printer.

If you specify a character height that is too large (typically 480 or 640 depending on the make of printer) then the screen shows an error message when you try to print the sign.

There is an alternative method of specifying character heights which allows the height of each line of text to be selected independently. This is accomplished by pressing CONTROL H when the cursor is in the required line of text, and is described in section 6.3.

#### 4.5 Changing the Font using Embedded Commands

In the previous exercises you have controlled the appearance of the printed sign by changing the options at the top of the screen.

There are commands which affect the layout of the sign which can be 'embedded' in the text. These commands just take effect from their position in the text. An embedded layout command must be contained within \ characters.

In the screen illustrated below the font in the options area is Standard and there is an embedded command:

\ Western

at the start of the second line of the text. When this sign is printed the first line will be in the Standard font and the second line will be in the Western font.

Font:	Standard	Height:	90
Options:	Landscape	Copy:	0
Stretch:	Simple	Border:	0
Stretch:	Simple	Stretch:	90
Stretch:	Off	Stretch:	None
Press CTRL O to change these Options.			
Height:	400		
Copy:	Western		
Border:	Western		
Copy:			
Height:			

Try printing this sign. Note that the height is set back to 90.

Embedded commands can be placed at any position. They do not have to be at the beginning of a line. Also, in the font selection command it is sufficient to specify just enough letters of the font name to uniquely identify the font. This means that the shorter form of the embedded command:

\ FW

will work just as well provided that there is no other font whose name begins with the same letters.

The embedded commands are described in section 6.2. Also, the COPY key may be used to display a list of these commands.

#### 4.6 Over to you

In the previous exercises you have learned how to change the options and also how to embed layout commands within the text.

You might now like to experiment with some of the options and embedded commands that you have not used in the above exercises. Refer to section 6 for a list and explanation of the options and commands.

#### 4.7 Some further examples

The TAS-SIGN disc includes some example signs which demonstrate the use of the options and embedded commands.

To load a sign from disc press CONTROL L. A list of the signs stored on the disc is displayed. The example signs are named:

EXAMPLE1  
EXAMPLE2  
EXAMPLE3 etc.

Type a sign name and press RETURN to load the sign. Then print the sign and study the options and embedded commands. Refer to section 6 to understand the effect of these commands.

## 5. Editor Commands

### **COPY** scroll help

The top part of the screen shows one of the following four sets of information:

- Options
- Editing commands
- Layout commands
- Fonts

The **COPY** key is used to view the next item in the above list.

### **ARROW KEYS** move cursor

The arrow keys at the right of the keyboard are used to move the cursor to any required position on the screen.

### **SHIFT ←** word left

Holding down **SHIFT** and pressing the **←** key moves the cursor to the start of the word to the left of the cursor.

### **SHIFT →** word right

This command moves the cursor to the start of the next word to the right.

### **CONTROL ←** start of line

Holding down **CONTROL** and pressing the **←** key moves the cursor to the start of the line.

### **CONTROL →** end of line

This command moves the cursor to the end of the line.

### **CONTROL ↑** start of screen

This command moves the cursor to the beginning of line 1.

### **CONTROL ↓** end of screen

The cursor is moved to the end of the last line by this command.

### **CONTROL O** move text left

This command moves the text under and left of the cursor left one character position. There is no effect if there is already a character at the left margin.

### **CONTROL E** move text right

This command moves the text under and to the right of the cursor right one character position. There is no action if there is already a character at the right margin. This command is useful for creating additional space to insert additional letters or words into existing text.

### **CONTROL D** delete line

This command deletes the line containing the cursor. Subsequent lines are moved up.

### **CONTROL I** insert line

A new blank line is inserted at the line containing the cursor by this command. There is no action if there is already text in the final line.

### **CONTROL K** insert mode on/off

When insert mode is off a character that is typed overwrites any character at the current cursor position. When insert mode is on a space is created for any character that is typed by moving the remainder of the line to the right. The current insert mode setting is shown in the status line at the bottom of the screen.

### **CONTROL O** change options

This command is used to change one or more of the options in the options area at the top of the screen. After **CONTROL O** has been pressed the cursor keys are used to select an option that is to be changed. The **SPACE BAR** key changes the selected option. Press **RETURN** to finish changing options and to return to the text. The options are described in section 6.1.

Whenever **TAS-SIGN** is loaded it inspects the disc to see if it contains a sign file with the name **START**. If there is a file called **START** then it is loaded. This facility allows a sign file (which need not contain any text) to be saved which consists of the options set to those that you most often use. This file is then loaded automatically whenever **TAS-SIGN** is loaded.

### **ESC** print sign

The sign is printed when the **ESC** key is pressed. There is a delay before the printing starts while **TAS-SIGN** inspects the text and constructs an overview of the sign. Once printing has started it can be abandoned by pressing the **ESC** key again.

During printing a decreasing count is shown at the bottom left hand corner of the screen. The count shows the remaining number of dot units along the length of the page. Printing finishes when the count reaches zero.

### **CONTROL S** save sign

This command saves a sign to disc. A list of the signs currently held on disc is displayed. The program then asks for a name for the sign to be saved. Type a name, up to eight characters, and consisting of letters and/or numbers. Then press **RETURN**.

Press **ESC** to abandon the save operation.

There is one special sign name. If a sign is saved with the name **SPECIAL**

then this sign will automatically be loaded the next time that TAS-SIGN is loaded. This is particularly useful for setting up default options.

**CONTROL L load sign**

This command loads a sign that has previously been saved to disc. A list of the signs that are held on disc is displayed. The program then asks for the name of the sign to be loaded. Type one of the sign names and press RETURN, or press ESC to abandon the load operation.

During a load or a save the drive may be changed by typing the drive letter followed by a colon in place of a filename. The top part of the display then changes to show a list of the sign files on the disc in the specified drive.

**CONTROL A enter alternate characters**

The alternate characters are those with codes between 128 and 254. They cannot be typed directly from the keyboard. When this command key is pressed TAS-SIGN requests a code. Type a number between 128 and 254 and press RETURN. The requested alternate character from the CP/M Plus character set will then appear at the cursor position. Note that, due to disc space limitations, the fonts supplied with TAS-SIGN for the CPC and PCW computers contain very few of the alternate characters. The characters in each TAS-SIGN font are listed in Appendix 4. If a sign contains a character that is not in the font then it is printed as a space.

**CONTROL C exit to CP/M**

This command is used to finish working with TAS-SIGN and return to CP/M. The program requests confirmation before obeying this command.

# 6. Layout Commands

There are three ways in which the layout of the printed sign can be controlled:

- (1) By changing the options shown in the options area at the top of the screen.
- (2) By embedding commands within the text. Embedded commands begin and terminate with the \ character.
- (3) By directly changing the character height and the gap for each line.

## 6.1 Options

Press CONTROL O to change options. Then use the cursor keys to select the required option and press the space bar to change the option.

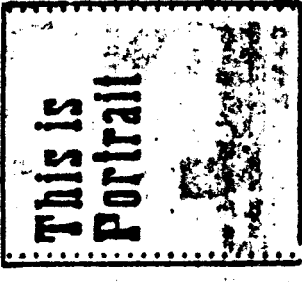
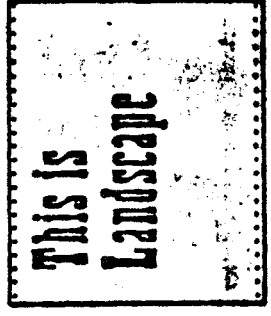
The various options are listed below.

### Font

The font is selected by this option. The font may be changed part way through a sign by an embedded command described in section 6.2

### Orientation

The orientation of text can be either portrait or landscape.



In landscape orientation the text is printed at right angles to the direction of paper movement. Landscape orientation is suitable for printing long signs or headers in large lettering as a line of text can be printed across several sheets of paper.

When portrait orientation is selected, TAS-SIGN prints the text horizontally across the paper in the same direction as when the printer is being used normally. In portrait orientation there is a limit to the number of characters that can be printed out on each line. This limit depends on the size of character selected, as well as the type of spacing and stretch factor used.



### Strike

The strike can be single or double.

If double strike printing is turned on then the print head repeats each pass across the paper width. This results in darker print but the sign takes more time to produce.

Double strike printing is not possible if your printer is set up to do an automatic linefeed when it receives a carriage return.

### Density

Single or double density graphics may be selected. In single density most models of printer print 480 dots across the width of the paper. In double density this is increased to 960 dots resulting in better definition and darker image, but the sign takes longer to print.

A few models of printer do not have a double density graphics mode.

### Meshing

Meshing may be on or off. When meshing is on the print-head performs one or two (depending on the printer model) additional passes printing dots between the dots printed on the first pass.

Meshing enhances the definition and gives a darker image but the sign takes two or three times longer to print.

The combination of meshing on and double density gives particularly good results.

### Italics

Letters may be printed in both normal and italic forms. This option toggles between the two forms. There is also an embedded command that turns italics on and off.

### Spacing

Spacing may be proportional, kerned, or constant. With constant spacing each letter takes up the same amount of space along the line. The amount of space is that of the widest character in the font.

W A S

CONSTANT SPACING

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With proportional spacing the spacing between the right edge of one letter and the left edge of the next letter is adjusted to be approximately the same between any pair of letters.

W A S

PROPORTIONAL SPACING

Kerning is the same as proportional spacing except that, in addition, the gap between letters which can overlap each other is decreased to give a more uniform and pleasing effect.

W A S

KERNING

There is also an embedded command which may be used to change the spacing part way through a document.

### Underlining

This option is used to specify if the text in the sign is to be underlined. There is also an embedded command to turn underlining on and off.

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## 6.2 Embedded Commands

Commands that are embedded in the text must be contained within \ characters. For example, the `!+` command to turn italics on, would be typed into the text as:

`\ !+ \`

More than one command can be inserted at the same place in the text by separating the individual commands by semicolons. For example, the `!+;u+` command to turn both italics and underlining on would be entered as:

`\ !+;u+ \`

Spaces are ignored in embedded commands and the case of letters is not significant, so that the above command is the same as:

`\ !+;u+ \`

**Font** select font (name = font name)

This embedded command is used to select a specified font. The characters following the `Font` command are printed in the specified font until another `Font` command is encountered. In the following example the font is changed first to `Casual` and then to `Block`:

The font is `\ Fcasual \` changed twice in `\ Fblock \` this example.

It is sufficient to type just enough letters of the font name to uniquely identify the font. The following example is therefore equivalent to that shown above:

The font is `\ Fc \` changed twice in `\ Fb \` this example.

provided that there are no other fonts on the disc whose names begin with the letters `C` or `B`.

**Stn** select stretch factor (nn = number) `!+;u+;stn`  
The width of characters relative to their height can be stretched or condensed by specifying a stretch factor. Normal width lettering has a stretch of 100, double width lettering has a stretch of 200, and a stretch of 50 specifies half width characters. Any stretch between 50 and 200 may be selected.

`\ S200 \` Double width, `\ S50 \` half width, `\ S100 \` and normal width. `!+;u+;stn`

**Kern** manual kern (nn = number)  
The characters on each side of this command are kerned by the specified number of units. It is not usually necessary to use this command as automatic kerning between letters may be specified in the options area or by the `S+` embedded command. This command may however, be used to kern non-letter characters, and may also be used to force letters to overlap although there is no guarantee that they will then print correctly.

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**Reverse**  
If reverse is turned on, then the sign is printed as white lettering on a black background.

**Centering**  
If centering is turned on then each line of text is centered when the sign is printed. If the sign is in landscape orientation then the centering is with respect to the longest line. In portrait orientation the centering is across the width of the paper.

There is an embedded command which may be used to centre individual lines when the centering option is off.

**Height**  
This option specifies the default character height. The character height is specified in units of pins in the print-head (i.e. the size of a dot). The maximum allowed height is typically 479 or 639. The minimum recommended heights are given in Appendix 4.

The character height for each line may also be specified directly as described in section 6.3 and this overrides any height specified in the options area.

**Gap**  
This option specifies the default gap between the lines. The gap is measured in the same units as character height.

**Border**  
This option instructs TAS-SIGN to print a border around the sign. The number gives the size of the border. Enter the number 0 for no border. The border is printed across the width of the paper and is printed in whatever hatch is specified in the options area.

**Stretch**  
The width of characters relative to their height can be stretched or condensed by specifying a stretch factor. Normal width lettering has a stretch of 100, double width lettering has a stretch of 200, and a stretch of 50 specifies half width characters. Any stretch between 50 and 200 may be selected.

There is an embedded command to change the stretch part way through a sign.

**Hatching**  
When a character is hatched the area inside the character shape is printed in a pattern. This pattern is called the hatching pattern. Note that these hatching patterns apply to landscape orientation only. When a sign is printed in portrait orientation the hatching pattern is as for landscape orientation.

The hatching patterns are illustrated in Appendix 5.

Hatching may also be controlled by embedded commands.

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### 6.3 Character Height and Gap

#### CONTROL H select character height

The character height for a line is specified by pressing CONTROL H while the cursor is on the required line. The cursor then moves into the 'height and gap' box at the left of the screen. Type the required character height and press RETURN.

Specifying the height in this manner overrides the height specified in the options area.

The character height is specified in units of pins in the printer pin-head. The maximum allowed height depends on the printer and is typically 479 or 638.

If the height of a line is not specified then TAS-SIGN prints the line at the same height as the previous line.

#### CONTROL G select gap between lines

This option is used to specify the gap between lines. The gap is specified in the same units as character height.

#### I+/- Italic on/off

Letters may be printed in both normal and italic forms. This option toggles between the two forms.

Italics are \I+ \ turned off and then \I- \ off in this line.

#### U+/- underlining on/off

Some words in a sign can be given extra emphasis by underlining. This command is used to turn underlining on and off.

Judicious use of \U+ \ underlining \U- \ is effective.

#### S+/-/ = spacing kered/proportional/constant

The three possible embedded commands for changing the type of spacing between letters are:

- \S+ \ kered spacing
- \S- \ proportional spacing
- \S= \ constant spacing

These types of spacing are described in section 6.1.

#### C centre line

This command centres the line of text in which it is embedded. The centering is relative to the longest line when in landscape orientation, and is relative to the width of the paper when in portrait orientation.

#### R right align

This command right aligns all the text on the line to the right of the command. The text to the right of the command is moved right so that the right edge is level with the longest line of text (landscape orientation) or is at the right edge of the paper (portrait orientation).

#### H# select hatching

- H# = no hatching
- H# = forward diagonal
- H# = backward diagonal
- H# = cross diagonal
- H# = vertical
- H# = horizontal
- H# = cross orthogonal
- H# = squares
- H# = diamonds

Hatching is described in section 6.1. The hatching patterns are illustrated in Appendix 5.

## 7. Errors and Restrictions

The maximum number of fonts that TAS-SIGN can access simultaneously is 16.

The maximum number of characters that can occur in a sign is 250.

Before TAS-SIGN begins printing a character shape it reads data for the shape from disc and constructs a mathematical representation of the shape in memory. The maximum number of character shapes that can be held in memory is 32. This results in the restriction that TAS-SIGN cannot print more than 32 characters simultaneously. Once a character shape has been printed the memory it occupies becomes free for further characters.

When TAS-SIGN is instructed to print, various checks are made to ensure that the sign can be printed successfully. If any of the following errors are reported then the sign is not printed.

**Embedded command too long or not terminated**

The most common cause for this error is that an embedded command has not been terminated with the \ character.

**Syntax error in embedded command**

This error is reported when an invalid embedded command is encountered.

**Font not found**

An incorrect font name has been specified. The COPY key may be used to display the font names at the top of the screen.

**Single option not terminated or too long**

This error may occur when embedded commands have not been separated by semi-colons, or where the terminating \ character has been omitted.

**No text characters**

There are no characters to be printed.

**Too many text characters**

The sign contains more than the maximum number of characters.

**Cannot fit with specified sizes**

This error is reported when the height, gap sizes, and the number of lines in landscape orientation, or the number of characters in the longest line in portrait orientation, have been set such that the total height or width of the sign cannot fit across the width of the paper. The only solution is to decrease the heights, gaps, and/or the number of lines in landscape orientation, or to reduce the number of characters in the longest print line in portrait orientation.

**Invalid border width**

**Invalid height**

**Invalid gap**

The specified value is too large.

**Invalid stretch factor**

The specified stretch is outside the range 50-200.

The following errors can occur during the printing of a sign:

**Too many characters in Raster Space**

Too many line segments in Raster Space

These errors occur if the computer has no more free memory in which to construct character shapes. If one of these errors does occur then the only solution is to re-design the sign in such a way as to reduce the number of characters that are being printed simultaneously. If in portrait orientation then increasing the gaps to a value of greater than 8 will sometimes stop the error from occurring.

# Appendix 1 - Configuring TAS-SIGN for printers not on the list.

If your make and model of printer is not on the printer selection list then it is very likely that the program will work if a similar printer on the list is selected. If a printer on the list is the same make, but a different model, from your own, then select this printer and try running TAS-SIGN. If this does not work, or if there is no printer from the same manufacturer as your printer on the list, then it is worth trying the Epson FX-80 option. In as much as there is a standard for printers (there is not) the Epson FX-80 is the standard. If this fails, then the option on the printer selection screen:

press \* to define some other printer

should be selected. The program then asks for the following information concerning your printer. This information can be obtained from your printer manual. Where a sequence of numbers is required press RETURN after typing each number and press RETURN for a second time to terminate the sequence.

(1) The sequence for graphics line spacing. This is the control code sequence that adjusts the distance the paper is moved after each line is printed so that there is no gap between the bottom dot of one line and the top dot of the next line. On many printers this line spacing is 1/2 of an inch. The CPC can only use seven pins of an eight pin print-head in graphics mode and this fact should be taken into account when calculating the required line spacing, by specifying some smaller line spacing.

(2) The sequence for normal line spacing. This is the control code sequence that adjusts the distance the paper is moved after each line is printed so that there are six lines per inch.

(3) The first and the second sequence for single density bit image (graphics) printing and the number of dot positions for each sequence. Each of these sequences should put the printer into bit image mode for the specified number of dots. The sum of the number of dots for each sequence should equal the total number of dots across the width of the paper in single density bit image mode.

Two sequences are sometimes necessary as the CPC cannot send a code greater than 127 to the printer. This means that the usual ESCAPE K Epson type sequences for 480 bytes of graphics data:

27	75	224	1	(224 + 1 x 256 = 480)
27	75	127	1	(127 + 1 x 256 = 383)
27	75	97	0	( 97 + 0 x 256 = 97)
				( Total = 480)

cannot be used as the CPC cannot send code 224. The problem is circumvented by sending two sequences:

If only one sequence is necessary, then enter a null sequence for the second sequence.

(4) The first and second sequence for double density bit image (graphics) printing and the number of dot positions for each sequence. The same considerations apply here as in (3) above.

(5) The number of mesh passes. If the printer can linefeed 1/8 of an inch then set the number of mesh passes to 2. If it can linefeed 1/4 of an inch then set the number of mesh passes to 1. If the minimum possible linefeed is greater than 1/4 of an inch (1/2 of an inch on some printers) then set the number of mesh passes to zero.

(6) The sequence for intra-mesh line spacing. This is the sequence of codes that sets the linefeed spacing to 1/8 or 1/4 of an inch.

(7) The sequence for mesh pass line spacing. This is the linefeed distance after the one or two mesh passes. On a printer with a graphics line spacing of 1/2 ( = 3/8) of an inch with two 1/8 inch mesh passes the required linefeed would be 3/8 of an inch.

(8) The number of pins in the print-head (7 or 8). Always specify 7 for the CPC 6128 as it cannot drive the eighth pin of an eight pin printer.

(9) Whether the least significant pin is at the top or bottom of the print-head.

(10) The printer name.

127	75	224	1	(224 + 1 x 256 = 480)
127	75	127	1	(127 + 1 x 256 = 383)
127	75	97	0	( 97 + 0 x 256 = 97)
				( Total = 480)

