

# **THERMOCODE SERIES 2**

# **ESCAPE SEQUENCES**

## **ISSUE 1.21**

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**ESCAPE CODE LISTINGS**

<b>Esc Code</b>	<b>Qualifier</b>	<b>Command Global</b>	<b>Description</b>	<b>Section</b>
<b>A</b>	None	Yes	Loading Fonts to Printer File Store.	<b>1.06</b>
<b>B</b>	None	No	Loading Barcodes within a Format.	<b>1.30</b>
<b>C</b>	See below	Yes	Command Code.	-
<b>C</b>	<b>C</b>	Yes	Pause Printing.	<b>2.70</b>
<b>C</b>	<b>R</b>	Yes	Resume Printing.	<b>2.71</b>
<b>C</b>	<b>INIT</b>	Yes	Deletes fonts, variables, graphics, and formats from filestore and memory, restores all default settings.	<b>2.80</b>
<b>D</b>	See below	Yes	Delete Command	-
<b>D</b>	<b>A</b>	Yes	Delete all Fonts from filestore	<b>2.52</b>
<b>D</b>	<b>A (font name)</b>	Yes	Delete specific Font from filestore	<b>2.53</b>
<b>D</b>	<b>E</b>	Yes	Deletes all Global Variables from filestore & memory	<b>1.73</b>
<b>D</b>	<b>E (global name)</b>	Yes	Deletes specific Global Variable from filestore & memory	<b>1.74</b>
<b>D</b>	<b>F</b>	Yes	Deletes all Formats from filestore & memory	<b>2.21</b>
<b>D</b>	<b>F (format name)</b>	Yes	Deletes specific Format from filestore & memory	<b>2.22</b>
<b>D</b>	<b>V</b>	Yes	Deletes all Global Graphics from filestore & memory	<b>1.43</b>
<b>D</b>	<b>V (graphic name)</b>	Yes	Deletes specific Global Graphic from filestore & memory	<b>1.44</b>
<b>D</b>	<b>X</b>	Yes	Restores all system variables back to default settings.	<b>2.41</b>
<b>D</b>	<b>X (variable name)</b>	Yes	Restores a specific system variables to default settings.	<b>2.42</b>
<b>D</b>	<b>Z</b>	Yes	Clear all Errors	<b>2.76</b>
<b>E</b>	none	No	Variable Insertion Fields.	<b>1.50</b>
<b>F</b>	none	No	Format name. (file name)	<b>1.07</b>
<b>G</b>	See below	Yes	Global Graphics & Global Variable Text fields	-
<b>G</b>	<b>E</b>	Yes	Global Variable text fields loaded to filestore.	<b>1.70</b>
<b>G</b>	<b>P</b>	Yes	Automatic Print Command	<b>1.71</b>
<b>G</b>	<b>Q</b>	Yes	Remote Quantity Command	<b>1.72</b>
<b>G</b>	<b>V</b>	Yes	Global Graphic file loaded to filestore	<b>1.42</b>
<b>I</b>	none	Yes	Overwriting of existing Variable Insertion Fields	<b>2.83</b>
<b>K</b>	none	No	Identifies end of Format file	<b>2.82</b>
<b>L</b>	none	No	Line & Box Field	<b>1.20</b>
<b>O</b>	none	No	Password Identification Number	<b>1.01</b>
<b>P</b>	none	No	Print Parameters.	<b>1.08</b>
<b>Q</b>	none	No	Quantity of prints Command within a format.	<b>2.60</b>
<b>S</b>	none	Yes	Select format from filestore and load to Printer memory.	<b>1.90</b>
<b>T</b>	None	No	Text Fields	<b>1.10</b>

<b>U</b>	<b>E {Name}</b>	Yes	Update Variable Text Field {Name = Variable Name}	<b>2.85</b>
<b>U</b>	<b>V {Name}</b>	Yes	Update Graphic field {Name = Graphic Name}	<b>2.86</b>
<b>V</b>	None	No	Graphics fields loaded with format.	<b>1.41</b>
<b>W</b>	None	No	Graphic used in a format, including co-ordinates etc.	<b>1.40</b>
<b>X</b>	None	Yes	System Variables.	<b>1.80</b>
<b>Z</b>	None	Yes	Request Printer type & Software Version.	<b>2.10</b>
<b>Z</b>	<b>A</b>	Yes	Request Font names from the filestore	<b>2.50</b>
<b>Z</b>	<b>A (font name)</b>	Yes	Requests Font file from filestore	<b>2.51</b>
<b>Z</b>	<b>E</b>	Yes	Requests Global Text field names from the filestore	<b>2.43</b>
<b>Z</b>	<b>E (global name)</b>	Yes	Requests Global Text field file from the filestore.	<b>2.44</b>
<b>Z</b>	<b>F</b>	Yes	Requests Format names from filestore	<b>2.20</b>
<b>Z</b>	<b>F (format name)</b>	Yes	Request Format file from the filestore	<b>2.20</b>
<b>Z</b>	<b>M</b>	Yes	Request available memory of filestore.	<b>2.72</b>
<b>Z</b>	<b>N</b>	Yes	Request Name of Format being printed	<b>2.73</b>
<b>Z</b>	<b>P</b>	Yes	Requests all parameters of Format being printed	
<b>Z</b>	<b>PSPEED</b>	Yes	Requests print speed setting.	
<b>Z</b>	<b>PBURN1</b>	Yes	Requests value of Burn A to B.	
<b>Z</b>	<b>PBURN2</b>	Yes	Requests value of Burn B to A.	
<b>Z</b>	<b>PPRESSURE</b>	Yes	Requests value of Pressure setting	
<b>Z</b>	<b>PPEEL</b>	Yes	Request value of Peel Height setting	
<b>Z</b>	<b>POFFSET</b>	Yes	Requests value of Print position offset	
<b>Z</b>	<b>PHOMOFF</b>	Yes	Requests value of print position from Home Datum	
<b>Z</b>	<b>PROTATE</b>	Yes	Requests value of format rotation.	
<b>Z</b>	<b>Q</b>	Yes	Request quantity that has been set and amount of prints that have been done. (current image only)	<b>2.61</b>
<b>Z</b>	<b>R</b>	No	Reserved Future Use	
<b>Z</b>	<b>S</b>	Yes	Requests Status line of printer	<b>2.74</b>
<b>Z</b>	<b>T</b>	Yes	Request Total Prints. (cycles in life of Printer)	<b>2.62</b>
<b>Z</b>	<b>V</b>	Yes	Request Global graphic names from filestore.	<b>2.54</b>
<b>Z</b>	<b>V (graphic name)</b>	Yes	Requests Global Graphic file from the filestore.	<b>2.55</b>
<b>Z</b>	<b>X</b>	Yes	Request System variables settings from the memory.	<b>2.40</b>
<b>Z</b>	<b>X (system name)</b>	Yes	Requests a specific system Variable value.	<b>2.40</b>
<b>Z</b>	<b>Z</b>	Yes	Requests all Errors	<b>2.75</b>

## 1.00 General Notes

1. All lines prefixed by a zero
2. All lines terminated by carriage-return + line feed.
3. Null lines allowed.
4. The maximum characters on each line within a format is 150.
5. Names of Formats, can have up to 15 alphanumerical characters. (No punctuation characters allowed) followed by a minimum of one space character.
6. Fonts, Graphics & Variable Insertion Fields, can have up to 10 alphanumerical characters. (No punctuation characters allowed) followed by a minimum of one space character.

Within the dedicated name there must be no space characters. The only valid characters used within a name:-

Alphabetical (upper or lower case) A -Z  
Numerical, 0 -9  
Underscore, \_

## Networking

The rest of this manual only shows the character strings required for Printer related functions, you can then add a network number followed by a coma in front of the character strings or commands as required.

### Example of Standard format

```

0FTest Label
0PSPEED      0050
0PBURN1      0450
0PBURN2      0450
0PPRESSURE   20
0PROTATE     0
0PHOMOFF     26.0
0TARIALBD    0050012012000Open Date Equipment
0Q000000
0K
    
```

### Example of Standard format being sent to Network Printer (number 12)

```

12,0FTest Label
12,0PSPEED      0050
12,0PBURN1      0450
12,0PBURN2      0450
12,0PPRESSURE   20
12,0PROTATE     0
12,0PHOMOFF     26.0
12,0TARIALBD    0050012012000Open Date Equipment
12,0Q000000
12,0K
    
```

## 1.01 PASSWORDS

Up to 9 password levels with individual descriptions and access codes may be programmed within the printer, the levels allow the user to specify which staff can access or program specific types of data. Normally the higher level of password will mean stricter security requirements. Utilising the levels correctly will allow a Manager to restrict his personnel to dedicated functions only. Passwords are Numeric values between 1 and 8 characters long.

### Default Password Settings

Password	Default Code	Default Name	Functions
Level 1 SYSPASS1	1111	OPERATOR	Selecting Formats. Editing Home Offset. Editing Quantity of Format. Can be disabled.
Level 2 SYSPASS2	2222	CHARGEHAND	Access to Level 1. Editing Text Fields (fixed & variable) Saving Format as another name. Can be disabled.
Level 3 SYSPASS3	3333	ENGINEER	Access to Levels 1 & 2. Editing Format Parameters. Editing Service Functions. Editing Format "X" & "Y" positions. Can be disabled.
Level 4 SYSPASS4	4444	MANAGER	Access to Levels 1, 2 & 3. Editing Barcode variables Editing Counter Variables Can be disabled.
Level 5 SYSPASS5	5555	SUPERVISOR	Access to Levels 1, 2, 3 & 4. Access to Supervisor Menu. Can be disabled.
Level 6 SYSPASS6	XXXX	OPENDATE SERVICE	Access to Levels 1, 2, 3, 4 & 5. Allows Service Engineer Access to customer machines
Level 7 SYSPASS8	XXXX	PROGRAMMING	Access to Levels 1, 2, 3, 4, 5 & 6. Access to Password setup menu's.
Level 8 SYSPASS8	XXXX	OPEN DATE TECHNICIAN	Allows access to Level 8 only. Programming of Printer Setup Menu, building & testing of machines only.
Level 9 SYSPASS9	XXXX	SECURITY	Allows access to all Levels.

The above security levels are used by the mini-terminal, to allow or restrict access to specific functions of the Printer. Editing of the Formats or changing the Printer settings, can then be restricted to prevent unauthorised access.

Once the required password has been entered correctly, access is then allowed, to only those specific functions of the program that are preceded with your security level number or less. Whichever level of password that is entered, will depend upon the type of access allowed. Entering a level 4 password will allow access to level 4 security codes and all functions of the lower security levels.(1 to 3)

## 1.02 Setting Passwords (Activation, Descriptions & Passcodes)

Using these system variable codes, allows users to specify the name and pass-code of a specific System password. The passwords are system variables and only used by the mini-terminal display.

**Esc {XSYPASS1} {1} {,} {NNNNNNNN} {,} {1111}**

where:-

{XSYPASS1}	=	System Password name.
{1}	=	enable/disable flag.
{,}	=	field separator. (coma)
{DDDDDD...}	=	Password description. 18 alpha-numerical characters max.
{,}	=	field separator. (coma)
{NNNNNNNN}	=	Password, 1 to 8 numeric characters.

## 1.03 Requesting Individual Passwords

**Esc {ZXSYPASS1}**

where:- {ZXSYPASS1} = System Variable name for password for level 1.

printer responds with:-

**Esc {XSYPASS1} {1} {,} {NNNNNNNN} {,} {1111}**

where:-

{ZXSYPASS1}	=	Escape code to request password for level
{1}	=	enable/disable flag.
{,}	=	field separator. (coma)
{DDDDDD...}	=	Password description. 18 alpha-numerical characters max.
{,}	=	field separator. (coma)
{NNNNNNNN}	=	Password, 1 to 8 numeric characters.

**1.06 Loading a Font**

The Printer can store and utilise either TrueType (\*.ttf) or Bit Map (\*.sfp) fonts, for the printing of text characters, automatic dates and counter fields.

The format for loading a font into the printer is as follows:-

**Esc A {name} {ss} {FFFFFF} {CR} Esc {font}**

{name}	=	The name of the font: this field must be ten characters long with printable ASCII characters followed by trailing spaces.
{ss}	=	00 for scalable fonts; point size for bit mapped fonts.
{FFFFFF}	=	size in bytes of the font file. (000000) always six digits.
{CR}	=	Carriage Return.
Esc	=	Escape.
{font}	=	font file contents, {FFFFFF} bytes.

**1.07 Print Format Description (Used within a format)**

The format for sending a new print format is as follows:-

Esc F {name}

{name}	=	The name of the format: this field can be up to 15 characters long, with printable ASCII characters, followed by trailing spaces. (No spaces allowed within name)
--------	---	---

**1.08 Print Parameter Variables (Used within a format)**

The Print Control Parameters must be entered before any Field Parameters. The Field Parameters, however, may be sent in any order, with any type field being used more than once if necessary.

These sequences will set the values of the print control parameters of the format. The Variable types must be named and entered correctly. See list below:-

Esc P {name} {setting value}

Where:-

P	=	Escape code for Print parameter Variables.
{name}	=	Description of Parameter Field to change. This field must be ten characters long with printable ASCII characters followed by trailing spaces. (Names of fields are pre-defined as list below)
{setting value}	=	Actual value Required.

**Note !.**

Formats do not have to contain the print parameter variables, as the printer has default settings. You may however wish to include some of the parameter variables if required, these will override the default settings. Ideally all formats should contain all print parameter variables, otherwise simple editing via the mini Terminal is not possible.



### Standard Parameter Field Names

<b>SPEED</b>	=	Print speed in millimetres per second. (0050 = 50 mm/sec)
<b>BURN1</b>	=	Burn Value in microseconds, for intermittent A to B. and Continuous style printer. (0450 = 450 microseconds)
<b>BURN2</b>	=	Burn Value in microseconds, for intermittent B to A only (0450 = 450 microseconds)
<b>PRESSURE</b>	=	Pressure value in Newtons. (20 = 20 Newtons or 2Kg)
<b>PEEL</b>	=	Peel height in millimetres. (05.0 = 5 millimetres)
<b>OFFSET</b>	=	Distance in millimetres of print position from actual print signal. (050.0 = 50 millimetres) Continuous models only.
<b>HOMOFF</b>	=	Print position offset from Home Datum. See notes below. (05.0 = 5 millimeters)
<b>ROTATE</b>	=	Rotation of the Format, either 0 = 0° or 2 = 180°.

### Home position offset. (HOMOFF)

This feature allows the user to specify within a format an offset in dots from the programmed Home position. This could save having to move the printer on the "Y" axis of a frame, enabling a new print position of the format to be achieved.

**See the Standard printer Default setting sheets for valid ranges of the Parameter variables.**

### Example of Print Parameter Variables within a Format:-

```

FName
PSPEED      0050
PBURN1      0450
PBURN2      0450
PPRESSURE   20
PPEEL       07.0 (Not normally used)
PROTATE     0
POFFSET     050.0 (Continuous Machines only)
PHOMOFF     26.0
TARIALBD    0050012012000Open Date Equipment
Q000000
K
    
```

**1.10 Text Lines** (Maximum 120 Text Lines per format, 60 printable characters per text line)

**Esc T {ffffffff} {xxxx} {yyyy} {ss} {o} {r} {P} (\1) {ppp} (\1) {a..a} (\0) {variable\_name} (\0) {b....b}**

NOTE (\0) means binary all zeros or the NULL character.

{ffffffff}	=	The name of the font: this field must be ten characters long with printable ASCII characters followed by trailing spaces.
{xxxx}	=	horizontal position, in dots.
{yyyy}	=	vertical position, in dots.
{ss}	=	scaling factor. (point size nominal)
{o}	=	orientation:- (Clockwise rotation) 0 = 0°, 1 = 90°, 2 = 180°, 3 = 270°.
{r}	=	Reverse outline option (not implemented) set at 0.
{P}	=	Proportional flag, 0 = fully proportional, 1 = monospace variable.
(\1)	=	Binary Character 1 (start of percentage of Font width)
{ppp}	=	Percentage width of Font, must be 3 digits. (may be left out if not required)
(\1)	=	Binary Character 1 (end of percentage of Font width)
{a...a}	=	Fixed ASCII text , may be left out if not required.
{variable_name}	=	Name of pre-defined variable. Must have a \0 before and after variable_name.
{b...b}	=	Fixed ASCII text, may be left out if not required.

**Note!**

When using multiple variable insertion fields within a format, you must still have a \0 before and after each variable\_name. Please see following examples.

**Example 1:-**

TARIALBD 0050005012000**5212**\0**variable1**\0

Fixed text (5212) before a variable named field (variable1)

**Example 2:-**

TARIALBD 0050005012000**5212**\0**variable1**\0\0**variable2**\0

Fixed text (5212) before a two variable named fields (variable1 & variable2)

**Example 3:-**

TARIALBD 0050005012000\0**variable1**\0**5212**

Fixed text (5212) after a variable named field (variable1)

**Example 4:-**

TARIALBD 0050005012000\0**variable1**\0**5212**\0**variable2**\0

Fixed text (5212) between two variable named fields (variable1 & variable2)

**1.20 Line / Box Field** (No maximum limits on amount of fields)

Esc L {xxxx} {yyyy} {www} {hhhh} {vvvv} {rrrr}

{xxxx} = Horizontal position, in dots (X axis).  
 {yyyy} = Vertical position, in dots (Y axis).  
 {www} = Horizontal width, in dots (X axis).  
 {hhhh} = Vertical height, in dots (Y axis).  
 {vvvv} = Width thickness, in dots (X axis).  
 {rrrr} = Height thickness, in dots (Y axis)

Together, these parameters may describe vertical lines, horizontal lines, filled blocks or boxes, with sides of different thickness. No terminator character is required, as the data is of fixed length.

Lines or filled blocks are described by supplying width and height parameters as required and setting both thickness parameters (vvvv) + (rrrr) to all zero's. Boxes are described by supplying all parameters as required, where the thickness parameters set the thickness of the vertical and horizontal sides of the box respectively.

**1.30 Barcode Field** (maximum 10 Barcode fields per format)

Esc B {ss} {xxxx} {yyyy} {hhhh} {o} {b} {r} {h} {c} {s} {a..a} (\0) {variable\_name} (\0) {b...b}

NOTE (\0) means binary all zeros or the NULL character.

{ss}	=	Style	Symbology	Style	Symbology
		00	= EAN 8	09	= CODABAR
		01	= EAN 13	10	= MSI
		02	= EAN 128	11	= CODE 93
		03	= UPC-A	12	= EXTENDED CODE 93
		04	= UPC-E	13	= UCC - 128
		05	= CODE 39	14	= HIBC
		06	= CODE 128	15	= UPCE (6, SYSTEM 0)
		07	= ITF CODES	16	= UPCE (6, SYSTEM 1)
		08	= EXTENDED CODE 39		
		{xxxx}	= horizontal position		
		{yyyy}	= vertical position		
		{hhhh}	= height (not including human readable characters)		
		{o}	= orientation:- (Clockwise rotation)		
			0 = 0°		
			1 = 90°		
			2 = 180°		
			3 = 270°		
		{b}	= Narrow Bar width in dots. (between 2 to 5)		
		{r}	= styles (element thickness & ratios):-		
			0 = 3:1 ratio		
			1 = 2.5:1 ratio		
			2 = 2:1 ratio		
		{h}	= Human readable option, (1 = ON, 0 = OFF, 2 = Special).		
		{c}	= Checksum Digit Automatic, (1 = ON, 0 = OFF).		
		{s}	= Speed flag, 0 = normal, 1 = boundary move (future use)		
		{a...a}	= Fixed ASCII text, may be left out if not required.		
{variable_name}	=		Name of pre-defined variable. Must have a \0 before and after variable_name.		
{b...b}	=		Fixed ASCII text, may be left out if not required.		

**Note!**

When using multiple variable insertion fields within a format, you must still have a \Ø before and after each variable\_name. Please see following examples.

**Example 1:-**

B0100500020015004011**5212\Øvariable1\Ø**

Fixed text (5212) before a variable named field(variable1)

**Example 2:-**

B0100500020015004011**5212\Øvariable1\Ø\Øvariable2\Ø**

Fixed text (5212) before a two variable named fields (variable1 & variable2)

**Example 3:-**

B0100500020015004011**\Øvariable1\Ø5212**

Fixed text (5212) after a variable named field(variable1)

**Example 4:-**

B0100500020015004011**\Øvariable1\Ø5212\Øvariable2\Ø**

Fixed text (5212) between two variable named fields (variable1 & variable2)

**Note!.** For EAN type barcodes, the style parameter will be ignored.

**1.40 Global Graphics Field used in a Format** (Maximum 40 Graphic fields per format)

Global graphics, these are graphic files that are stored within the Printer filestore, and then can easily be used within a format by specifying the name, position, scale size and orientation, without the need to download the graphic image every time. Customers may store their standard logo's etc and then just call them up within the Format file details.

**Esc W {nnnnnnnnnn} {xxxx} {yyyy} {s} {o}**

{nnnnnnnnnn} = Name of Global Graphic file stored within Printer filestore.

{xxxx} = Horizontal position, in dots.

{yyyy} = Vertical position, in dots.

{s} = Scaling factor:-

0 = 1:1

1 = 2:1

2 = 4:1

{o} = orientation:- (Clockwise rotation)

0 = 0°

1 = 90°

2 = 180°

3 = 270°

Where a scaling factor of N:1 applies, each dot and each row are copied N times until the image memory, so that the final image size is N\* width x N\* height.

**1.41 Graphics Field loaded in a Format.**

Esc V {nnnnnnnnnn} {www} {hhh} {S} {ffff} {CR} Esc {c {d...d}..c}

{nnnnnnnnnn}	=	Name of Graphic image, 10 alphanumerical characters.
{www}	=	width (bits)
{hhh}	=	height (bits)
{S}	=	Style of Graphic image.
{ffff}	=	Size in bytes of the graphic. Note that this is not just width times height, unless the graphic is rectangular.
{CR}	=	Carriage Return.
Esc	=	Esc.
{c}	=	Byte count, the number of bytes to follow in the line. (two bytes of binary data, high byte first, then low byte)
{d...d}	=	Content (binary data).

No terminator character is used, as the data is in binary format.

The width and height are also used to determine how the data are translated, as follows:-

The data forms a bit mapped image, with the first two bytes giving the byte count for the row and the third byte describing the top left pixel of the image.

The following data describes the top row of the image, until the byte count matches the stated value, when the rest of the row, up to the stated width, is filled with spaces. The process is repeated for each subsequent row, until the row count matches the stated height. (i.e. raster scan pattern)

The byte counts can be used to reduce the data required to transmit or store an image, by omitting trailing blank dots. This is particularly useful for alphabetical characters.

**1.42 Global Graphics Fields loaded to Printer**

These fields are loaded to, and stored within the Printer, they can then be easily accessed by stating a Global Variable name within the Graphic line required to print. Therefore many formats may use, the same global graphic field without the need to completely write out or download the full graphic text field information each time, as the graphic data is stored within the printer.

Esc GV {nnnnnnnnnn} {www} {hhh} {S} {ffff} {CR} Esc {c {d...d}..c}

{nnnnnnnnnn}	=	Name of Graphic image, 10 alphanumerical characters.
{www}	=	width (bits)
{hhh}	=	height (bits)
{S}	=	Style of graphic image file.
{ffff}	=	Size in bytes of the graphic. Note that this is not just width times height, unless the graphic is rectangular.
{CR}	=	Carriage Return.
Esc	=	Escape.
{c}	=	Byte count, the number of bytes to follow in the line. (two bytes of binary data, high byte first, then low byte)
{d...d}	=	Content (binary data).

No terminator character is used, as the data is in binary format.

The width and height are also used to determine how the data are translated, as follows:-

The data forms a bit mapped image, with the first two bytes giving the byte count for the row and the third byte describing the top left pixel of the image.

The following data describes the top row of the image, until the byte count matches the stated value, when the rest of the row, up to the stated width, is filled with spaces. The process is repeated for each subsequent row, until the row count matches the stated height. (i.e. raster scan pattern)

The byte counts can be used to reduce the data required to transmit or store an image, by omitting trailing blank dots. This is particularly useful for alphabetical characters.

#### **1.43 Delete all Global Graphics**

Esc D V

This command deletes all Global Graphics from the printer File store. The current print format will be de-selected, and the printer will be "Off Line".

#### **1.44 Delete Individual Global Graphic**

This command deletes a specific graphic from printer memory.

Esc D V {name}

Where:-

{name}            =        Actual name of graphic in printer, this name must be correct and is case sensitive.

This command deletes a specific Global Graphic from the printer File store. The current print format will be de-selected, and the printer will be "Off Line".

#### **1.50 Variable Insertion Fields** (Maximum 40 Variable insertion fields per format, 40 characters per field)

The idea is that a named text variable can be defined into a design format, which can then be inserted into a text or barcode field. When working on the Terminal, instead of directly editing the text or barcode, the variables can be edited. This would allow a text field which currently has to be edited as a complete entity to be edited as one or more variables, and display the actual variable name you are editing.

##### **Variable Insertion Field Names**

**The name of any Variable Insertion Field, can have a maximum of 10 Alphanumerical characters. (No punctuation characters allowed) followed by a minimum of one space character. No spaces allowed within name.**

**Types of Variable Insertion fields**

<b>Variable Insertion Field types</b>	<b>Description</b>	<b>Variable Insertion Field types</b>	<b>Description</b>
<b>0</b>	<b>Fixed Text</b>	<b>6</b>	<b>Year types</b>
<b>1</b>	<b>Text using Limits</b>	<b>7</b>	<b>Month types</b>
<b>2</b>	<b>Reserved Future use.</b>	<b>8</b>	<b>12 hour times</b>
<b>3</b>	<b>24 Hour times</b>	<b>9</b>	<b>Shift Codes</b>
<b>4</b>	<b>Counter Fields</b>	<b>X</b>	<b>Automatic Daysaving</b>
<b>5</b>	<b>Day types</b>	<b>Z</b>	<b>Day Saving only</b>

**1.51 Variable Insertion field (Fixed text) type 0**

Esc E {nnnnnnnnnn} {0} {tttttttt...}

{nnnnnnnnnn} = Name of Variable Insertion Field, Max 10 Alphanumerical characters. (No punctuation characters allowed) followed by a minimum of one space character. (No spaces allowed within name)

{0} = 0 = unchecked variable.

{tttttttt} = Text of Variable Insertion Field. (40 characters max)

**1.52 Variable Insertion field (using limits) type 1**

Esc E {nnnnnnnnnn} {1} {tttttttt...} {,} {LLLLL} {,} {HHHHH}

{nnnnnnnnnn} = Name of Variable Insertion Field, Max 10 Alphanumerical characters. (No punctuation characters allowed) followed by a minimum of one space character.

{1} = Variable set up with high and low limits. (numerical text only)

{tttttttt} = Text of Variable Insertion Field

{,} = Separator character (coma)

{LLLLL} = Lower limit of variable text.

{,} = Separator character (coma)

{HHHHH} = Higher limit of variable field.

**1.53 Variable Insertion field (24 Hour Time types) type 3**

Esc E {nnnnnnnnnn} {3} {T} {ooo}

{nnnnnnnnnn} = Name of Variable Insertion Field, Max 10 Alphanumerical characters. (No punctuation characters allowed) followed by a minimum of one space character. (No spaces allowed within name)

{3} = Variable Time indication.

{T} = Type of Time insertion Field (see below listing)

{ooo} = Amount of minutes to offset. (valid range -1439 to +1439)

**Types of 24 hour Time Insertion fields:-**

1 = hh:mm:ss (24 hour)	2 = hh:mm (24 hour)
3 = hhmm (24 hour)	4 = hh (24 hour)
5 = mm	6 = ss

**Note!. All 24 hour times are automatic.**

**1.54 Variable Insertion field (12 Hour Time types) type 8**

Esc E {nnnnnnnnnn} {8} {T} {offset} {,} {am} {,} {pm}

{nnnnnnnnnn}	=	Name of Variable Insertion Field, Max 10 Alphanumerical characters. (No punctuation characters allowed) followed by a minimum of one space character. (No spaces allowed within name)
{8}	=	Variable Time indication.
{T}	=	Type of Time insertion Field (see below listing)
{offset}	=	Amount of minutes to offset. (valid range -14391 to +1439)
{,}	=	Separator character, coma.
{am}	=	First 12 hour indication, change as required.
{,}	=	Separator character, coma.
{pm}	=	Second 12 hour indication, change as required.

**Types of 12 hour Time Insertion fields:-**

1 = hh:mm:ss (12 hour)	2 = hh:mm (12 hour)
3 = hhmm (12 hour)	4 = hh (12 hour)
5 = mm	6 = ss

**Note!.** All 12 hour times are automatic, and inserted with am or pm respectively if specified as shown in the above section 1.55.



### 1.55 Variable Insertion fields (Counter Fields) type 4

This function is a special Variable Insertion counter field that allows the user to specify:-

**Start Number**  
**Justification**  
**Increment**  
**Pallet Count**  
**Counter rollover or Batch Quantity**

The Counter variable fields can be used in Text and Barcode fields or both.

#### **Counter field Format** (Maximum 20 fields per format design)

Esc E {nnnnnnnnnn} {4} {sssssss....} {,} {J} {,} {iiiiiii...} {,} {pppp..} {,} {rrrrrrr...}

where:-

Esc E	=	Escape Code to tell printer Variable Insertion Field.
{nnnnnnnnnn}	=	Name of Variable Insertion Field, Max 10 Alphanumerical characters. (No punctuation characters allowed) followed by a minimum of one space character. (No spaces allowed within name)
{4}	=	Specifies Counter type Variable Insertion field.
{sssssss..}	=	Counter start Number, leading zero's specify the maximum counter capacity and printability. Leading spaces before the start number indicate the number will be printed with leading spaces. (see justification parameter)
{,}	=	Separator character (coma)
{J}	=	Justification Character, ( 0 = left ), ( 1 = right )
{,}	=	Separator character (coma)
{iiiiiii...}	=	Increment amount, specify the amount each print has to advance.
{,}	=	Separator character (coma)
{pppp..}	=	Pallet Count/Repeating sequence Number, specifies the amount of the same prints required before incrementing to the next count.
{,}	=	Separator character (coma)
{rrrrrr}	=	Roll - over number, specifies the last printed number before the counter resets to the original start number.

#### **Specifying Stop Number**

To specify the Number of Prints required, or stop number simply "edit" the Quantity line of the Format.

### 1.56 Variable Insertion field (Day types) type 5

Esc E {nnnnnnnnnn} {5} {T} {ooo} , {rrrr}

{nnnnnnnnnn} = Name of Variable Insertion Field, Max 10 Alphanumerical characters. (No punctuation characters allowed) followed by a minimum of one space character. (No spaces allowed within name)

{5} = Variable Day indication.

{T} = Type of Time insertion Field (see below listing)

{ooo} = Amount of Days to offset. (Valid range 1 to 999)

, = Separator character. (coma)

{rrrr} = Offset from Midnight in minutes to rollover date.

#### Types of Day Insertion fields:-

1 = dd (day of month, 2 numerical digits) automatic.

2 = d (day of week as a numerical number, uses **SYSDAY1** Global variable)

3 = ddd (day of week , 3 alphabetical, uses **SYSDAY3** Global variable)

4 = ddddd.... (day of week, alphabetical spelling, uses **SYSDAY** Global variable)

5 = JJJ (Julian Day of Year, Day 366 = 29 Feb)

6 = JJJ (Julian Day of Year, Day 366 = 31 December)

### 1.57 Variable Insertion field (Year types) type 6

Esc E {nnnnnnnnnn} {6} {T} {ooo}

{nnnnnnnnnn} = Name of Variable Insertion Field, Max 10 Alphanumerical characters. (No punctuation characters allowed) followed by a minimum of one space character. (No spaces allowed within name)

{6} = Variable Year indication.

{T} = Type of Time insertion Field (see below listing)

{ooo} = Amount of Days to offset. (Valid range 1 to 999)

#### Types of Year Insertion fields:-

1 = Y (Year, 1 numerical digits. 1998 = 8) Automatic

2 = YY (Year, 2 numerical digits. 1998 = 98) Automatic

3 = YYYY (Year, 4 numerical digits. 1998 = 1998) Automatic

4 = WW (Week number of year, 2 numerical digits) Automatic

### 1.58 Variable Insertion field (Month types) type 7

Esc E {nnnnnnnnnn} {7} {T} {ooo}

{nnnnnnnnnn} = Name of Variable Insertion Field, Max 10 Alphanumerical characters. (No punctuation characters allowed) followed by a minimum of one space character. (No spaces allowed within name)

{7} = Variable Month indication.

{T} = Type of Time insertion Field (see below listing)

{ooo} = Amount of Days to offset. (Valid range 1 to 999)

#### Types of Month Insertion fields:-

1 = MM (Month, 2 numerical digits. JAN = 01) Automatic

2 = MMM (Month, 3 Alphabetical characters. JAN = JAN) uses **SYSMON3** Global variable.

3 = MMMMM... (Month, Alphabetical characters APRIL = APRIL) uses **SYSMONTH** Global variable.

4 = M (Month single alphabetical character, JAN = A) uses **SYSMON1** Global variable.

### 1.59 Shift Codes (hours of shift) Type 9 (Max 6 shift periods in one day)

Inserts the "SYSSHIFT" text into the relevant fields. **See section 1.70**

Esc E {nnnnnnnnnn} {9} {TTT1} {,} {TTT2} {,} {TTT3} {,} {TTT4} {,} {TTT5} {,} {TTT6}

{nnnnnnnnnn} = Name of Variable Insertion Field, Max 10 Alphanumerical characters. (No punctuation characters allowed) followed by a minimum of one space character. (No spaces allowed within name)

{TTT1} = Start time of 1<sup>st</sup> Shift period. (24 hour clock)

{,} = Separator character (coma)

{TTT2} = Start time of 2<sup>nd</sup> Shift period. (24 hour clock)

{,} = Separator character (coma)

{TTT3} = Start time of 3<sup>rd</sup> Shift period. (24 hour clock)

{,} = Separator character (coma)

{TTT4} = Start time of 4<sup>th</sup> Shift period. (24 hour clock)

{,} = Separator character (coma)

{TTT5} = Start time of 5<sup>th</sup> Shift period. (24 hour clock)

{,} = Separator character (coma)

{TTT5} = Start time of 6<sup>th</sup> Shift period. (24 hour clock)

If only 3 shifts are required per day, then only specify that values {TTT1} through to {TTT3}.

**1.60 Updating Existing Variable fields** (within currently selected Format)

It is now possible to update an existing variable field within a format already loaded to the Printer, this will allow a much higher speed updating of a format, as you do not have to send again any fixed text fields, lines or graphics. Updated fields should be made the same length as the original loaded within the format, but they can be shorter. (longer fields may overlap other printing fields)

Example1 (a typical format including a variable Lot No.)

```
FTEST2
PSPEED      0100
PBURN1      0420
PBURN2      0420
PPRESSURE   0018
ELot Number 0123456
B010050001015004011v789034\0Lot Number\0
TSwiss      005002501200vLot:-\0Lot Number\0
Q000000
K
```

To update the Lot Number only you send:-

```
ILot Number 0334477
Q000000
```

This would then upgrade the Lot number variable to 334477 instead of 123456

In this example I have shown the quantity being sent as well, this again is an option if you wish to set a new batch number quantity.

All types of variable insertion fields can be updated this way.

**1.61 Specifying Rollover times of Automatic Date Fields**

Normally automatic date fields always rollover (increment to next date) at midnight, it is now possible to change the actual time the specified format that is loaded to the printer will automatically update.

Rollover times are always set from midnight, either plus or minus in minutes. (-1439 to + 1439) range.

This does not change the actual time of the printer.

Example 1, Your Customer wants to print a normal date field type 2 with no day offsets but rollover the date at 10pm (2200) hours at night instead of midnight.(2400)

```
Edate      21000,0000
TARIALBD   00500050120000\0Date\0
```

<b>Where:-</b>	Date	=	Name of Variable
	2	=	Date type Variable
	1	=	Style of Date type
	000	=	Offset in days
	,	=	Field separator (coma)
	0000	=	Offset time in minutes from midnight.

**1.62 Specifying Daylight Saving Dates**

Customers can now program in the exact dates the Printer needs to adjust itself to allow for daylight savings. The Customer must specify both dates at which the time clock should adjust automatically, and whether the first date specified has the clock going forward or backwards by 1 hour.

It is assumed that any clock going forward will happen at 1am (0100 hours).

It is assumed that any clock going backward will happen at 2am (0200 hours).

The settings are made in the form of a variable as shown below, these can be set at any time but will only be relevant for the particular year that you set the date at.

**Esc {XSYSDSAVE} {ddd1} {,} {ddd2} {,} {h}**

{XSYSDSAVE} = System Variable name.

{ddd1} = The first date when a change is to take place. (4 digits MMDD)

{,} = field separator. (coma)

{ddd2} = The second date when a change is to take place. (4 digits MMDD)

{,} = field separator. (coma)

{h} = Hour advance/retard flag. 0 = Forwards 1 hour, 1 = Backwards 1 hour.

**Note !**

**You must set the time in the Printer after sending the daysaving Variable.**

**1.63 Requesting Daylight Saving**

**Esc {XSYSDSAVE}**

The printer responds with:-

{XSYSDSAVE} = System Variable name.

{0416} = The first date when a change is to take place. (4 digits MMDD)

{,} = field separator. (coma)

{1121} = The second date when a change is to take place. (4 digits MMDD)

{,} = field separator. (coma)

{h} = Hour advance/retard flag. 0 = Forwards 1 hour, 1 = Backwards 1 hour.

**1.70 Global Variable Text fields**

These fields are loaded to, and stored within the Printer, they can then be simply used by stating the Global Variable name within the Text line required to print. Therefore many formats may use the same global text field without the need to completely write out the full variable text field information each time.

Global Variable Text fields are specified the same as variable fields as shown in sections 1.50 – 1.59. but utilise the “ESC GE” in front to designate a Global Text Variable field.

**Global Variable Text Field (Fixed text) type O**

Esc GE {nnnnnnnnnn} {0} {ttttttttt...}

{nnnnnnnnnn} = Name of the Global Variable Text field, 10 alphanumerical characters.

{0} = 0 = unchecked variable.

{ttttttttt} = Text of Variable Insertion Field. (40 characters max)

**Dedicated Global Variable Text Fields (used within Automatic Date Codes only)**

Stored within the Printer are some dedicated Global Variable Text fields that are used in conjunction with Variable Insertion fields, you may customize the printing text of each type:-

<b>SYSDAY</b>	<b>=</b>	<b>Monday etc</b>	<b>(Alphabetical characters)</b>	<b>see example</b>
<b>SYSDAY3</b>	<b>=</b>	<b>MON</b>	<b>(3 Alphanumeric characters)</b>	<b>see example.</b>
<b>SYSDAY1</b>	<b>=</b>	<b>1</b>	<b>(1 Alphanumeric Character)</b>	<b>see example.</b>
<b>SYSMONTH</b>	<b>=</b>	<b>JANUARY</b>	<b>(Alphabetical characters)</b>	<b>see examples.</b>
<b>SYSMON3</b>	<b>=</b>	<b>JAN</b>	<b>(3 Alphabetical characters)</b>	<b>see examples.</b>
<b>SYSMON1</b>	<b>=</b>	<b>1</b>	<b>(1 Alphanumeric Character)</b>	<b>see example.</b>
<b>SYSSHIFT</b>	<b>=</b>	<b>S1</b>	<b>( Max 5 Characters)</b>	<b>see example</b>

The above variables are in the printer program as default in the English language, if customisation is required, please see the examples below that show how each file is created and sent to the Printer.

Change the required text in the Text string, do not forget to separate each field with a coma.

Escape Code	Global Text Name	Text string information
X	SYSDAY	Monday,Tuesday,Wednesday,Thursday,Friday,Saturday,Sunday
X	SYSDAY3	MON,TUE,WED,THU,FRI,SAT,SUN
X	SYSDAY1	1,2,3,4,5,6,7
X	SYSMONTH	January,February,March,April,May,June,July,August Etc.....
X	SYSMON3	JAN,FEB,MAR,APR,MAY,JUN,JUL,AUG,SEP,OCT,NOV,DEC
X	SYSMON1	A,B,C,D,E,F,G,H,J,K,L,M
X	SYSSHIFT	S1,S2,S3,S4,S5,S6

**Please Note !**

The Printer always assumes that Monday is the start of the week, and January is the first month of any year.

The above fields cannot be deleted from the Printer, only overwritten. An initialisation (INIT) of the Printer will change the variables back to the default english settings.

### Example Sending "SYSDAY1" to Printer filestore

Esc GE {Global text name} {text string information}

Where:-

GE = Escape codes for sending global text fields to printer.

{global text name} = Name of Global Text field to replace. (padded to 10 characters)

{text string information} = 1\02\03\04\05\06\07

#### 1.71 Auto Print Command (Remote computer or similar)

Esc GP

This command allows a user to command a print signal from a computer or similar.

#### 1.72 Remote Quantity Command

Esc GQ {NNNNNN}

Where:-

GQ = Escape codes for sending new quantity command.

{NNNNNN} = Actual new quantity value. (up to six digits)

Allows the operator to reset or specify a new quantity amount for the format being printed from a remote computer or similar.

#### 1.73 Delete all user specified Global Variable Text Fields

Esc D E

This command deletes all Global Variable Text fields from the printer File store. The current print format will be de-selected, and the printer will be "Off Line".

#### 1.74 Delete Individual Global Variable Text Field

This command deletes a specific Global Variable text field from printer memory.

Esc D E {name}

Where:- {name} = Actual name of Global Text in printer, this name must be correct and is case sensitive.

This command deletes a specific Global Variable Text fields from the printer File store. The current print format will be de-selected, and the printer will be "Off Line".

#### 1.80 Change System Variables

Esc X {name} {data}

{name} = The actual specific system variable you wish to change. (Must be ten characters)

{data} = Content of Data field, relevant to field description. See limits shown below

Variable Name	Value Retrieved	Description
SYSREL3	1	Relay 3 Output Configuration
SYSREL2	1	Relay 2 Output Configuration
SYSREL1	1	Relay 1 Output Configuration
SYSUPMOD	0	Configures "Ready" or "Done" Command
SYSDEFROT	0	Rotation Value of Format
SYSPPM	47	Prints per minute.
SYSRLEFT	???	Metres left on Thermal ribbon Reel
SYSRELDL	0.00	Relay 1 Delay time, milliseconds
SYSDEL	0	Print Delay time, milliseconds
SYSRIBGAP	0	Ribbon indexing, add value in (mm)
SYSMIRROR	0	Mirror printing, 1 = activated
SYSNETNUM	00	Printer Network number
SYSMONTH	January,February,March, Etc.	Automatic full description Month codes, Configurable by user.
SYS SHIFT	S1,S2,S3,S4,S5,S6	Automatic Shift codes, Configurable by user.
SYS MON1	A,B,C,D,E,F,G,H,I,J,K,L	Automatic single digit Month codes, Configurable by user.
SYS MON3	JAN,FEB,MAR,APR,MAY,JUN Etc.	Automatic three digit Month codes, Configurable by user.
SYS DAY3	MON,TUE,WED,THU,FRI,SAT,SUN	Automatic three digit Day codes, Configurable by user.
SYS DAY1	1,2,3,4,5,6,7	Automatic single digit Day codes, Configurable by user.
SYS DAY	Monday,Tuesday,Wednesday ETC.	Automatic full description Day codes, Configurable by user.
SYS LANG	1	Language Choice, 1 = English, 2 = French, 3 =German Etc.
SYS HYS5	35	Printhead power level percentage Cont. 5 (not used)
SYS HYS4	15	Printhead power level percentage Cont. 4 (not used)
SYS HYS3	40	Printhead power level percentage Cont. 3 (not used)
SYS HYS2	70	Printhead power level percentage Cont. 2 (not used)
SYS IOFFSET	0.00	Print B – A image offset, 2 direction printing only.
SYS ROLLER	31.83	Cassette Drive Roller diameter (mm)
SYS DEFQ	0	Default print Quantity.
SYS DEFO	0	Default print offset.
SYS DEFL	0.00	Default Peel Height.
SYS DEFP	20	Default Print Pressure.
SYS DEFBA	170	Default Burn Value (direction B to A).
SYS DEFAB	170	Default Burn Value (direction A to B).
SYS DEFS	100	Default Print Speed.
SYS PCENT	30	Percentage above Max power graph
SYS DUTY	85	Printhead power level percentage Cont. 1 (not used)
SYS DEF D	1	Default Date type, 1 = dd/mm/yy, 2 = mm/dd/yy, 3 = yy/mm/dd
SYS DIREC	1	Single or Bi-directional printing, 1 = Single, 2 = Bi-directional
SYS TYPE	1	Machine type, 0 = Standard , 1 = Direct Thermal, 3 = Cartons
SYS DEF HO	0.00	Default Print Home Offset.
SYS HEIGHT	1.00	Printhead Height above product.
SYS REV	0.00	Reverse Ribbon amount, Continuous Machines only.
SYS HOME	1	Printhead Home position, 1 = A, 2 = B.
SYS OFFSET	0.00	Encoder print signal offset, Continuous machines only.
SYS PRESS2	35	Maximum Printhead pressure.
SYS PRESS1	20	Minimum Printhead pressure
SYS BURN2	500	Maximum Burn Value, (micro-seconds)
SYS BURN1	50	Minimum Burn Value, (micro-seconds)
SYS SPEED2	400	Maximum Printhead Speed, (mm/sec)
SYS SPEED1	50	Minimum Printhead Speed, (mm/sec)
SYS WACT	0	Stop Printing on Low Foil, activated, 0 = no, 1 = yes.
SYS WARN	15	Low Foil warning length in Metres.
SYS REEL	500	Actual Foil Reel size in Metres.
SYS DSAVE		Spring & Winter Automatic Time changes. ( see Section 1.62)
SYS DATE	15/10/2000	Actual Date in Printer.
SYS TIME	08:24	Actual Time in Printer
SYS PASS9	1,SECURITY,9999	System Password Level 9, (activated, Description, Passcode)
SYS PASS8	1,TECHNICIAN,8888	System Password Level 8, (activated, Description, Passcode)
SYS PASS7	1,PROGRAMMING,7777	System Password Level 7, (activated, Description, Passcode)
SYS PASS6	1,OPENDATE,6666	System Password Level 6, (activated, Description, Passcode)
SYS PASS5	1,SUPERVISOR,5555	System Password Level 5, (activated, Description, Passcode)
SYS PASS4	1,MANAGER,4444	System Password Level 4, (activated, Description, Passcode)
SYS PASS3	1,ENGINEER,3333	System Password Level 3, (activated, Description, Passcode)
SYS PASS2	1,CHARGEHAND,2222	System Password Level 2, (activated, Description, Passcode)
SYS PASS1	0,OPERATOR,1111	System Password Level 1, (activated, Description, Passcode)
SYS PASS0	0	System Password Level 0, ( Passcode)



**Note! At anytime you may access an individual System Variable by the control:-**

**Esc Z X {Name}**      Where {name} is the Actual system variable code name as shown above, this will then return the actual value of the specified field.

## 1.90    **Select Format**

This command permits the selection of a format from the file store, which is then automatically Loaded to the Printer memory ready for printing.

Esc S {Name}

where:- {name}      =      Actual name of Format in file store, this name must be correct and is case sensitive.

## 1.91    **De-Select Format**

This command de-selects the currently selected format being printed, and parks the Printhead.

Esc S

## 2.0      **Request Parameters**

### 2.10    **Request Acknowledge**

Esc Z

Printer replies with:-      Esc Z (nnnnnnnnnn) "OK"

Where (nnnnnnnn)      =      Model no of printer & Software Version number.

### 2.20    **Request Format Data**

Esc ZF

Printer replies with:-      All format names stored within the Printer.

Esc    F      {name 1}  
          F      {name 2}  
          F      {name 3}  
       Etc.....

You can also upload an actual format file contents by specifying:-

Esc ZF {name 1}

**Printer replies with:-**

<b>FName</b>	
<b>PSPEED</b>	<b>0050</b>
<b>PBURN1</b>	<b>0450</b>
<b>PBURN2</b>	<b>0450</b>
<b>PPRESSURE</b>	<b>17</b>
<b>PROTATE</b>	<b>0</b>
<b>OFFSET</b>	<b>050.0</b>
<b>TARIALBD</b>	<b>00500120120000open Date Equipment</b>
<b>Q000000</b>	
<b>K</b>	

**Note!**    Graphic image data will not be transmitted, only the graphic text line contents will be displayed.

## 2.21 Delete all Formats

This command deletes all formats from file store & both printer memories.

Esc D F

This command deletes all fonts from the printer File store. The current print format will be de-selected, and the printer will be "Off Line".

## 2.22 Delete Individual Format

This command deletes a specific format from file store, and printer memory if being printed.

Esc D F {name}

where:- {name} = Actual name of Font in printer, this name must be correct and is case sensitive.

This command deletes a specific font from the printer File store. The current print format will be de-selected, and the printer will be "Off Line".

## 2.40 Request System Variables

Esc Z X

Printer replies with:- a list of the System variable names and there current values.

**Esc Z X {Name}** Where {name} is the Actual system variable name as shown above, this will then return the value of the specified system variable..

## 2.41 Delete System Variables Changes

Esc D X

This command restores all system variables back to the original default settings.

## 2.42 Delete Individual System Variable Changes

Esc D X {name}

This command restores a system specific variable back to the original setting.

Where:-

{name} = Actual name of Variable in printer, this name must be correct and is case sensitive.

## 2.43 Request Global Text Variable Names

Esc Z E

Printer replies with:-

Esc E {nnnnnnnnn1} {nnnnnnnnn2} {nnnnnnnnn3) Etc.....

Where :- nnnnnnnnn1 = First name of Global Text in file store as specified.

Where:- nnnnnnnnn2 = Second name of Global Text in file store as specified.

Names of texts will always be padded to 10 characters long, spaces after name. Next text will automatically follow on next line. After last text name a carriage return and line feed will indicate end of list.

## 2.44 Request Global Text Variable Information

Esc Z E {name}

Where:-

{name} = Actual name of text in file store.

Printer replies with:-

Esc E {name} {T} {S} {O} {aa...aa}

Where:-

{name} = Actual name of Global Text Variable in filestore.

{T} = Type of Global Variable Field.

{S} = style of the Type of Global Variable Field.

{O} = offset characters.

{aa..aa}= user defined variable used text fields.

## 2.50 Request Printer Font Names

Esc Z A

Printer replies with:-

Esc A {nnnnnnnnn1} {nnnnnnnnn2} {nnnnnnnnn3) Etc.....

Where :- nnnnnnnnn1 = First name of Font in Printer as specified.

Where:- nnnnnnnnn2 = Second name of Font in Printer as specified.

Names of fonts will always be padded to 10 characters long, spaces after name. Next font will automatically follow on next line. After last Font name a carriage return and line feed will indicate end of list.

## 2.51 Request Printer Font Information

Esc Z A {name}

Where:-

{name} = Actual name of Font in printer, this name must be correct and is case sensitive.

Printer replies with:-

Esc A {name} {FFFFFFF} {data}

Where:-

{name} = Actual name of Font in Printer.

{FFFFFFF} = File size in bytes, (six numerical characters)

{data} = Actual file contents of the font.

## 2.52 Delete all Printer Fonts

Esc D A

This command deletes all fonts from the printer File store. The current print format will be de-selected, and the printer will be "Off Line".

## 2.53 Delete Individual Font

Esc D A {name}

Where:-

{name} = Actual name of Font in printer, this name must be correct and is case sensitive.

This command deletes a specific font from the printer File store. The current print format will be de-selected, and the printer will be "Off Line".

## 2.54 Request Global Graphic Names

Esc Z V

Printer replies with:-

Esc V {nnnnnnnnn1} {nnnnnnnnn2} {nnnnnnnnn3} Etc.....

Where :- nnnnnnnnn1 = First name of Graphic in file store as specified.

Where:- nnnnnnnnn2 = Second name of Graphic in file store as specified.

Names of graphics will always be padded to 10 characters long, spaces after name. Next graphics will automatically follow on next line. After last graphic name a carriage return and line feed will indicate end of list.

## 2.55 Request Global Graphic Information

Esc Z V {name}

Where:-

{name} = Actual name of graphic in file store.

Printer replies with:-

Esc V {name} {FFFFFF} {data}

Where:-

{name} = Actual name of Graphic in file store

{FFFFFF} = File size in bytes, (six numerical characters)

{data} = Actual graphic file data.

## 2.57 Request Printhead Height

Esc ZJ

Printer replies with:-

Esc J {20}

Where:- {20} = Actual height of printhead from rubber base pad. (mm) 20 = 2.0 mm

## 2.60 Print Quantity (Used within a format only)

Esc Q {qqqqqq}

Where:-

{qqqqqq} = Quantity of prints required, 000001 - 999999 sets a batch of that quantity. (000000 = continuously printing until stopped by operator)

## 2.61 Request Print Quantity

Esc ZQ

Printer replies with:-

Esc Q {000000} {,} {PPPPPP}

Where:- {000000} = Quantity Value set in format design.

{,} =

{PPPPPP} = Quantity of prints done, within selected format.

## 2.62 Request Total Prints

Esc ZT

Printer replies with:-

Esc T {0000000000}

Where:- {0000000000} = Total number of Print Cycles of Printer

## 2.63 PRINTER OUTPUT TO SERIAL LINE

After a batch quantity of prints or an automatic print cycle, the printer replies on the Serial line with the following command:-

**EscDONE\n**

This is very usefull for automatically downloading the next print in a queue etc.

## 2.70 Pause Printing

Esc CC

This command requires no additional parameters. It causes the printer to pause printing after the operation on the current format is complete.

## 2.71 Resume Print

Esc CR

This command requires no additional parameters. It causes the printer to resume printing from the point at which it was stopped by the pause print command.

## 2.72 Request Memory

Esc ZM

Printer replies with:-

Esc M {aa....aa} { , } {bb....bb}

Where:- {aa....aa} = The amount of available memory in file store. (Bytes)

{ , } = coma, field separator only.

{bb....bb} = The Maximum file store memory. (Bytes)

### 2.73 Request Format Name

Esc ZN

Printer replies with:-

Esc N {nnnnnnnnnnnn}

Where:- {nnnnnnnnnn} = The Name of the Format being printed.

### 2.74 Request Printer Status

Esc ZS

Printer replies with:-

Esc S {nnnn} { , } {ttttttttt...t}

Where:- {nnnn} = Status Text Identifier.

{ , } = Coma (field separator)

{ttttttttt...t} = The Status of the Printer. (Cassette off etc.)

### 2.75 Request Errors

Esc ZZ

Printer replies with:-

Esc Z {nnnn1} { , } {nnnn2}

Where:- {nnnn1} = Error Text Identifier.

{ , } = Coma (field separator)

### 2.76 Clear Errors

Esc DZ

Allows user to clear all errors from a computer.

### 2.80 Initialise Part Printer

Esc CINIT

This command erases all stored global graphics, global variables, formats and fonts.

Basically only the system variables will be the only settings left in the printer. (must be in capital letters)

## **2.81 Initialise All Printer**

Esc CINEW

This command erases all programmed system variables, global graphics, global variables, formats and fonts.

The initial software default settings (System Variables) will then be active, basically any programmed settings you have made will be totally cleared. (must be in capital letters)

## **2.82 End of Format Command**

Esc K

This Command identifies the end of a Format file.

## **2.83 Insert**

This command allows you to update an existing variable field within the current format being printed.

Esc I {name} {aa...aa}

Where:-

{name} = Actual Name of Variable field you are replacing.

{aa...aa} = Information to overwrite exiting Text field, the string length must be exactly as the original variable.

**See Section 1.60 for a more detailed explanation.**

## **2.84 Program Printer**

Esc CIPROG

This command allows a reset of the microprocessor, allowing the Software program to be then sent to the printer. (must be in capital letters)

## **2.85 Update Variable Text Field**

This command allows you to update an existing variable text field within the current format being printed.

Esc UE {name} {aa...aa}

Where:-

{name} = Actual Name of Variable field you are replacing.

{aa...aa} = Information to overwrite exiting Text field, the string length must be exactly as the original variable.



**2.85 Update Graphic Field**

This command allows you to update an existing Graphic field within the current format being printed.

Esc UV {nnnnnnnnnn} {www} {hhh} {S} {ffff} {CR} Esc {c {d...d}..c}

{nnnnnnnnnn}	=	Name of Graphic image, 10 alphanumerical characters.
{www}	=	width (bits)
{hhh}	=	height (bits)
{S}	=	Style of Graphic image.
{ffff}	=	Size in bytes of the graphic. Note that this is not just width times height, unless the graphic is rectangular.
{CR}	=	Carriage Return.
Esc	=	Esc.
{c}	=	Byte count, the number of bytes to follow in the line. (two bytes of binary data, high byte first, then low byte)
{d...d}	=	Content (binary data).

Variable	Default	Min	Max	Description
SYSREL3	1	0	3	Relay 3 Output Configuration
SYSREL2	1	0	3	Relay 2 Output Configuration
SYSREL1	1	0	3	Relay 1 Output Configuration
SYSUPMOD	0	0	2	0 = Network Printer, 1 = Esc Done, 2 = Ready Mode
SYSDEFROT	0	0	2	Default Rotation of images, 0 = Normal, 2 = 180°.
SYSPPM	0	0	N/a	Quantity of Prints over the last minute
SYSRLEFT	N/a	N/a	N/a	Amount of Ribbon left on reel (metres)
SYSRELDL	0.00	-500	500	Relay 1 Delay time, milliseconds
SYSDEL	0	0	999	Print Delay time, milliseconds
SYSRIBGAP	0	0	10	Ribbon indexing, add value in (mm)
SYSMIRROR	0	0	1	Mirror printing, 1 = activated
SYSNETNUM	00	00	99	Printer Network number
SYSMONTH	January, Etc.			Automatic full description Month codes, Configurable by user.
SYSSHIFT	S1,S2,S3,S4 Etc.			Automatic Shift codes, Configurable by user.
SYSMON1	A,B,C,D,E,F, Etc.			Automatic single digit Month codes, Configurable by user.
SYSMON3	JAN,FEB,MA Etc.			Automatic three digit Month codes, Configurable by user.
SYSDAY3	MON,TUE, ETC.			Automatic three digit Day codes, Configurable by user.
SYSDAY1	1,2,3,4,5,6,7			Automatic single digit Day codes, Configurable by user.
SYSDAY	Monday, ETC.			Automatic full description Day codes, Configurable by user.
SYSLANG	1	1	9	Language Choice, 1 = English, 2 = French, 3 =German
SYSHYS5	40	0	100	Printhead power level percentage Cont. 5 (not used)
SYSHYS4	40	0	100	Printhead power level percentage Cont. 4 (not used)
SYSHYS3	50	0	100	Printhead power level percentage Cont. 3 (not used)
SYSHYS2	50	0	100	Printhead power level percentage Cont. 2 (not used)
SYSIOFFSET	0.00	-1	1.0	Print B – A image offset, 2 direction printing only.
SYSROLLER	31.83	20	40	Cassette Drive Roller diameter (mm)
SYSDEFQ	0	0	999999	Default print Quantity.
SYSDEFO	0	0	999.9	Default print offset. (mm)
SYSDEFL	0.00	0	10.0	Default Peel Height.
SYSDEFP	20	20	35	Default Print Pressure.
SYSDEFBA	170	0	10,000	Default Burn Value (direction A to B).
SYSDEFAB	170	0	10,000	Default Burn Value (direction B to A).
SYSDEFS	100	0	1,000	Default Print Speed.
SYSPCENT	30	0	55	Percentage above Max Power Graph
SYSDUTY	85	0	85	Maximum power level percentage Cont. 1 (not used)
SYSDEFD	1	1	3	Default Date type, 1 = dd/mm/yy, 2 = mm/dd/yy, 3 = yy/mm/dd
SYSDIREC	1	1	2	Single or Bi-directional printing, 1 = Single, 2 = Bi-directional
SYSTYPE	1	1	3	Machine type, 0 = Standard , 1 = Direct Thermal, 3 = Cartons
SYSDEFHO	0.00	0	10.0	Default Print Home Offset.
SYSHEIGHT	1.00	0	10.0	Printhead Height above product.
SYSREV	0.00	0.00	10.0	Reverse Ribbon amount, Continuous Machines only.
SYSHOME	1	1	2	Printhead Home position, 1 = A, 2 = B.
SYSOFFSET	0.00	0	999.9	Encoder print signal offset, Continuous machines only.
SYSPRESS2	35	0	35	Maximum Printhead pressure.
SYSPRESS1	20	0	35	Minimum Printhead pressure
SYSBURN2	500	0	10,000	Maximum Burn Value, (micro-seconds)
SYSBURN1	50	0	10,000	Minimum Burn Value, (micro-seconds)
SYSSPEED2	400	0	1,000	Maximum Printhead Speed, (mm/sec)
SYSSPEED1	50	0	1,000	Minimum Printhead Speed, (mm/sec)
SYSWACT	0	0	1	Stop Printing on Low Foil, activated, 0 = no, 1 = yes.
SYSWARN	15	0	100	Low Foil warning length in Metres.
SYSREEL	500	100	1000	Actual Foil Reel size in Metres.
SYSDSAVE				Spring & Winter Automatic Time changes. ( see Section 1.62)
SYSDATE	15/10/2000			Actual Date in Printer.
SYSTIME	08:24			Actual Time in Printer
SYSPASS9	1,SECURITY,9999			System Password Level 9, (activated, Description, Passcode)
SYSPASS8	1,TECHNICIAN,8888			System Password Level 8, (activated, Description, Passcode)
SYSPASS7	1,PROGRAMMING,7777			System Password Level 7, (activated, Description, Passcode)
SYSPASS6	1,OPENDATE,6666			System Password Level 6, (activated, Description, Passcode)
SYSPASS5	1,SUPERVISOR,5555			System Password Level 5, (activated, Description, Passcode)
SYSPASS4	1,MANAGER,4444			System Password Level 4, (activated, Description, Passcode)
SYSPASS3	1,ENGINEER,3333			System Password Level 3, (activated, Description, Passcode)
SYSPASS2	1,CHARGEHAND,2222			System Password Level 2, (activated, Description, Passcode)
SYSPASS1	0,OPERATOR,1111			System Password Level 1, (activated, Description, Passcode)
SYSPASS0	0			System Password Level 0, ( Passcode)

**Specialist Programming Codes** (Mechanical parameters)

Shown below are some internal software settings, they allow specific control of the Stepper Motors and their associated timing controls that may prove useful to change for specialist applications.

**Please do not change any of these settings, unless you are certain of what you are doing.**

Each command can be requested individually, using the EscZ(command name). When requesting a specific command name, the printer will respond by sending out the command name followed by the value that has been set. Check the chart below to ensure that you understand what the value represents.

Command	Description	Default	Min	Max
XPSTVERT	Start speed Vertical Motor (mm/sec)	50	50	150
XPMAXVERT	Maximum speed Vertical Motor (mm/sec)	150	50	150
XPACCVERT	Acceleration rate Vertical Motor (steps/sec <sup>2</sup> )	5,000	2,000	10,000
XPSTHORIZ	Start speed Horizontal Motor (mm/sec)	60	60	400
XPMAXHORIZ	Maximum speed Horizontal Motor (mm/sec)	400	60	600
XPACCHORIZ	Acceleration rate Horizontal Motor (steps/sec <sup>2</sup> )	10,000	2,000	16,000
XPSTRIBBON	Start speed Ribbon Motor (mm/sec)	50	50	150
XPMAXRIBBON	Maximum speed Ribbon Motor (mm/sec)	300	100	600
XPACCRIBBON	Acceleration rate Ribbon Motor (steps/sec <sup>2</sup> )	5,000	2,000	16,000
XPSTARTDEL	Motor start delay, (milliseconds)	2	2	20
XPREVDEL	Motor reverse delay, milliseconds	20	2	20
XPMAXCONT	Maximum Continuous Print Speed (mm/.sec)	600	0	1000
XPSTEPHORIZ	Distance of horizontal motor step (mm)	0.083333	0	1
XPSTEPVERT	Distance of Vertical motor step (mm)	0.083333	0	1
XPSTEPRIBB	Distance of Ribbon motor step (mm)	0.083333	0	1
XPSPRINGR	Pressure Spring Rate/mm (newtons)	5.34	0	20
XPSPRINGPL	Pressure Spring Pre – Load (Newtons)	18.423	0	100
XPRESOL	Printer Resolution (dpi) dots/inch	300	0	600
XPRUNNOCAS	Run Printer with no Cassette	1	0	1

The commands below are used to control the speed of the motors during power up, and movements not associated with printing. The maximum values need to be low as the motors do not accelerate, only start & run at the default speed.

Command	Description	Default	Min	Max
XPPARKHORIZ	Horizontal Motor shuffle speed	60	60	120
XPPARKVERT	Vertical Motor shuffle speed	50	50	120
XPPARKRIBB	Ribbon Motor index speed after format selection	50	50	120

## **SYSTEM RELAYS**

SYSRELAY1 = Relay 1 in power supply, set at "0" for Stop Machine, or "1" for sequencing, "2" for Ready relay.

Stop Machine, switches when:- Printing.  
Cassette is removed.

Sequencing, switches when:- Printing

Ready relay, switches when:- No Format Selected  
Selecting Formats  
Image Generation  
Machine errors

SYSRELAY2 = Relay 2 in power supply, set at "0" for Start Machine or "1" to activate Low foil, "2" for Ready relay.

Start Machine, switches when:- Printing.  
Cassette is removed.

Low Foil, switches when:- Ribbon Warning

Ready relay, switches when:- No Format Selected  
Selecting Formats  
Image Generation  
Machine errors

SYSRELAY3 = Relay 3 in power supply, set at "0" for Fault relay or "1" to activate as Fault & Ready relay.

Fault relay, switches when:- No power to machine  
Cassette Removed  
Ribbon broken

Fault & Ready relay, switches when:- No Format Selected  
Selecting Formats  
Image Generation  
Machine errors

**Software Improvements/modifications to Previous Issues.**

1. Format names can now be up to 15 characters long.
2. Truetype fonts can now be scaled on the character width as a percentage.
3. Modified the Printhead burn algorithms and Cont1 – Cont5 power levels, the software Has been changed so the print speed and burn settings are now within the same terminal Menu. Both these are then checked to be within the allowed working range. The Software Now adjusts the burn values automatically when changing Print Speed in a format.
4. A rotation feature of the format has been added, this allows the user to rotate a format 180° From the Terminal, or set the printer to always print formats at 180° rotation.
5. Addition system parameters have been added to assist the running of the “NETMODE” software.

<b>SYSPPM</b>	<b>=</b>	<b>Prints per Minute</b>
<b>SYSRLEFT</b>	<b>=</b>	<b>Amount of Ribbon left on reel.</b>
<b>SYSDEFROT</b>	<b>=</b>	<b>Default Printer Rotation.</b>
6. SYSTYPE, has been modified to allow the user to select the following options:-

<b>SYSTYPE0</b>	<b>=</b>	<b>Standard Operation.</b> (Labels, films etc)
<b>SYSTYPE1</b>	<b>=</b>	<b>Direct Thermal Mode.</b> (Thermal Labels only)
<b>SYSTYPE3</b>	<b>=</b>	<b>Carton Printing Mode.</b> (Automatically detects the carton surface for printing, activates the pressure switch and prints)
7. Added additional Escape Code “U” for use during updating graphics or variable insertion fields.
8. Removed Escape Code “ZO” (request all passwords) as this is not required.
9. Added a new system variable “SYSUPMOD” which allows the user to select between a ready or done signal from the printer. Only normally used when updating graphics or variable text fields operating from a database or similar.

<b>SYSUPMOD = 0</b>	<b>(Does not send DONE or Ready, and updates both memory planes)</b>
<b>SYSUPMOD = 1</b>	<b>(Sends DONE at end of Print , and updates both memory planes)</b>
<b>SYSUPMOD = 2</b>	<b>(Sends Ready at start of Print and updates memory planes alternately)</b>
10. Fixed minor errors when retrieving and deleting fonts and graphic names.
11. Completed list of Mechanical Parameters.