

Elliott NWSM Laser Form Technical Information

Introduction

Elliott NWSM Laser Form supports form printing on blank paper with professional output. Elliott Business Software supports user definable form printing. This includes invoices, purchase orders and pre-defined laser printer forms. Other forms, like statements and picking tickets, although non-user definable, laser printing support is still available. However, in the past, to print these documents on laser printers, you would need pre-printed laser forms. If you should print on blank paper, since only text is supported for printing, the output will not look professional. This is where Elliott Laser Form printing support becomes valuable and allows printing with line draw, box, shading, text, color, bit map images and makes the output look professional when printing on blank paper. Elliott Laser Forms does not support printing of checks on blank paper because of the requirement of micro coding bank routing, account and check no on the form.

NWSM (NETcellent Windows Systems Module) is the foundation for Elliott Business Software. Starting from V6.X.009, NWSM started to support Laser Form printing. Starting from V6.X.054, NWSM started to support bar code printing with laser form. As of writing this document, the standard laser form has been defined already for COP & AR invoice, PO, picking ticket and AR statement. The sample logo that will be printed is NETcellent's logo. If you do not wish to print the sample bit map, you can simply delete the bitmap file from your data directory. Alternatively, you can substitute the bit map with your company logo. You may also change the standard laser form layout to fit your needs. This documentation serves as the necessary technical information for you to design a laser form yourself.

Concept

The traditional Elliott printing programs will output text data to the printer. However, if users choose laser forms in the Print Options window (please see figure 2), which will provide the line draw, shading and image for the laser form, then the system will merge the text and laser form together and print on your printer. **The printer can be any kind of printer and is not limited to a laser printer.** For example, you can print to a color inkjet printer and have beautiful output since NWSM Laser Form printing supports color. You can also print to a dot matrix printer. However, the dot matrix printing output will be too slow to make it practical. Although the color inkjet printer will achieve great output, it is also slow for the line draw, shading and image printing. Laser printer printing is fast even with the line draw, shading and image printing, and therefore is a practical solution if you intend to print forms like invoices on blank paper.

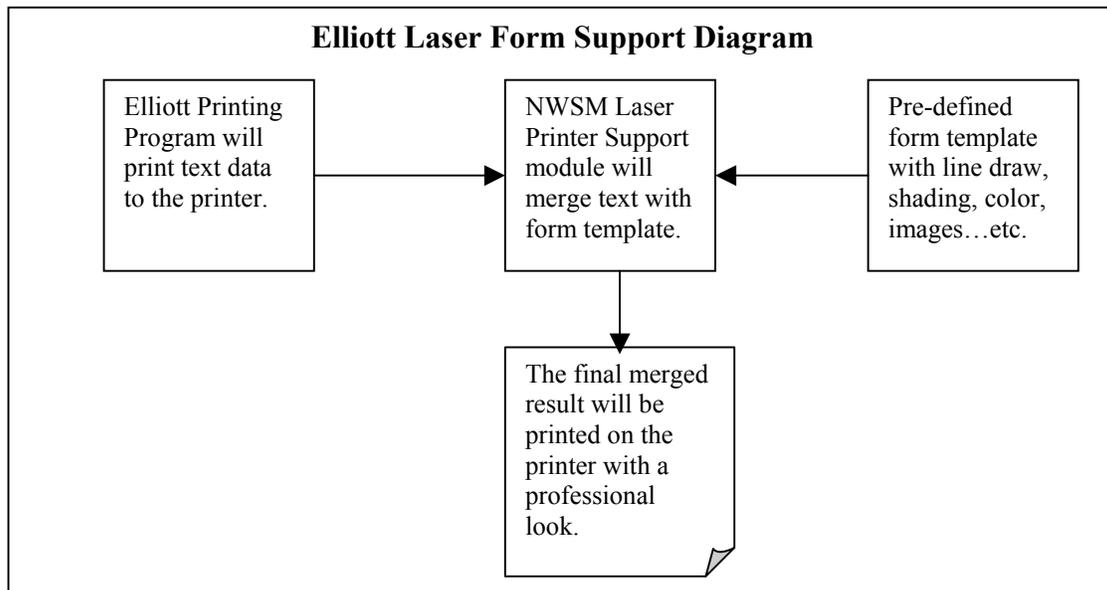


Figure 1. Elliott Laser Form Support Diagram.

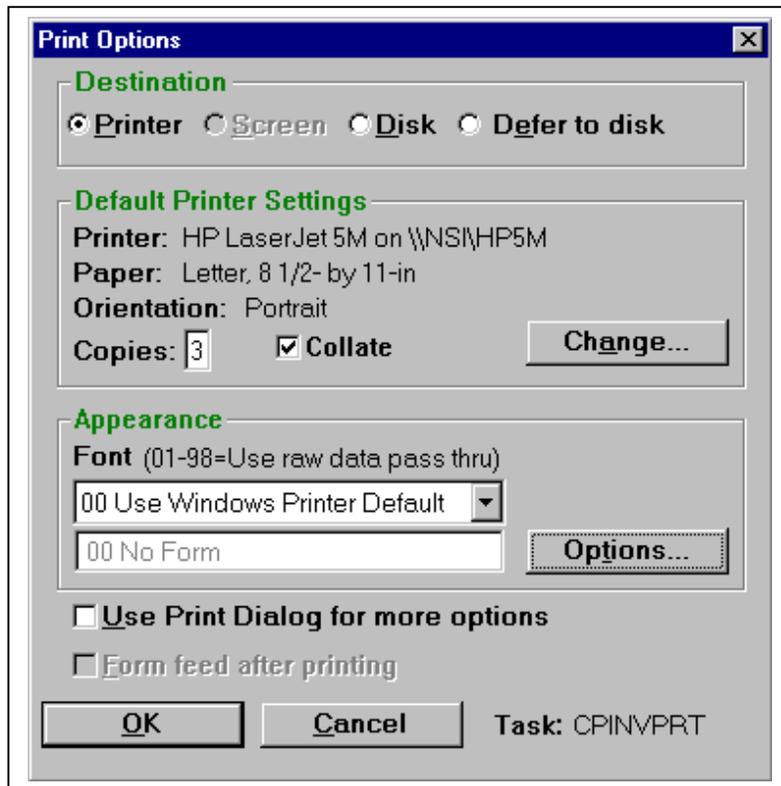


Figure 2. In the Print Options window, the user by default will see either blank or “00 No Form” beside the combo box of the Options button. Clicking on the Options button will display the “Appearance Options” window.

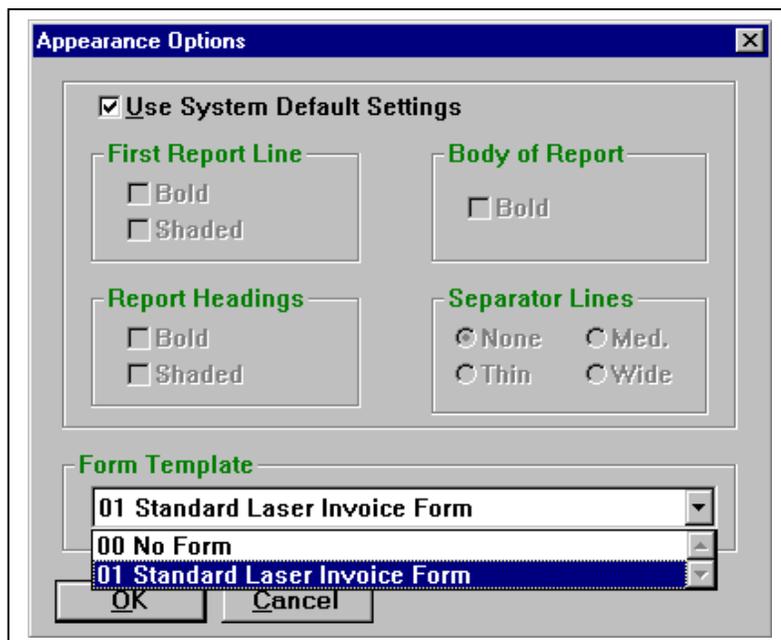


Figure 3. In the Appearance Options window, users can choose “01 Standard Laser Invoice Form” under form template. Currently, this is the only predefined laser invoice form that comes with NWSM.

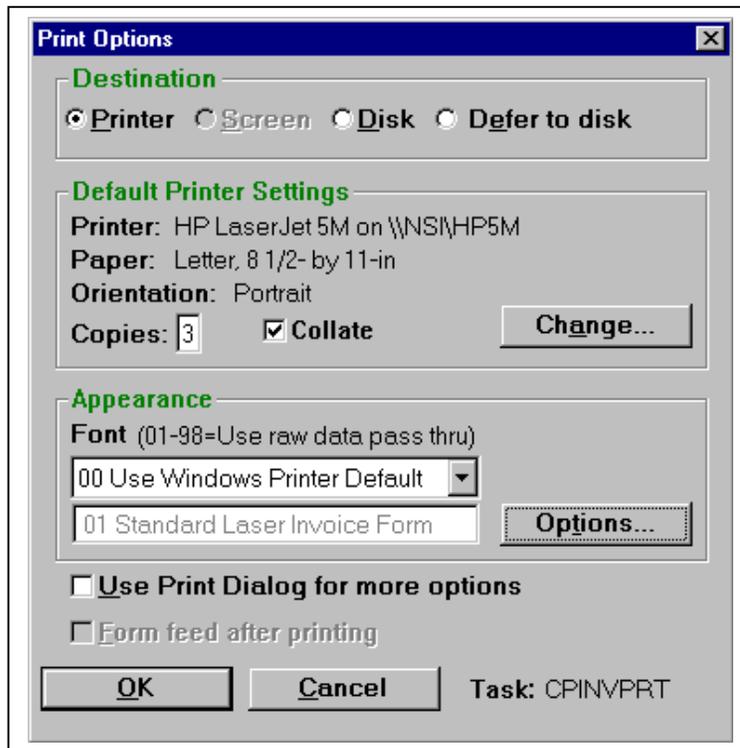


Figure 4. Once the proper item in the form template is selected, the combo box beside the Options button will show the template form you chose. The system will then print the text data and merge it with the template form to produce a professional looking output form on your printer. From this point on, your print options window will remember the form template you chose last time and use it as the default.

Setup Elliott to Use Standard Laser Forms

In Elliott, the application by default will assume the printing of a form is on a dot matrix printer with 66 lines per page. However, laser printers usually print 60 or 62 lines of text and may not have the same length as regular forms. Therefore, the user is required to setup Elliott to tell the system that you are using laser forms. The following are steps required to setup each form in order to print on laser printer:

COP Invoice

- COP Main Menu -> Util_Setup -> Invoice Form Setup -> Reset -> Laser
- COP Main Menu -> Util_Setup -> COP Setup -> 14. Default Invoice Form -> 99
- COP Main Menu -> Util_Setup -> COP Setup -> 21. Print On Laser Forms -> I or B

COP Picking Ticket

- COP Main Menu -> Util_Setup -> COP Setup -> 19. Print Pick Tic On Forms ? -> Y
- COP Main Menu -> Util_Setup -> COP Setup -> 20. Print Co Name On Pic Tic -> N
- COP Main Menu -> Util_Setup -> COP Setup -> 21. Print On Laser Forms? -> P or B

AR Service Invoice

- AR Main Menu -> Util_Setup -> Invoice Form Setup -> Reset -> Laser
- AR Main Menu -> Util_Setup -> A/R Setup -> 37. Default Invoice Form -> 99
- AR Main Menu -> Util_Setup -> A/R Setup -> 48. Print On Laser Forms? -> I or B

AR Statement

- AR Main Menu -> Util_Setup -> A/R Setup -> 17. Print Co Name On Stmt? -> N

- AR Main Menu -> Util_Setup -> A/R Setup -> 48. Print On Laser Forms? -> S or B

PO Statement

- PO Main Menu -> Util_Setup -> P/O Form Setup -> Reset -> Laser
- PO Main Menu -> Util_Setup -> P/O Setup -> 12. Default PO Form Number -> 99
- PO Main Menu -> Util_Setup -> P/O Setup -> 20. Print PO's On Laser ? -> Y

PR Check

Even though NWSM does not support printing of Check on blank paper (micro code issue), it does support printing of pre-printed PR Laser Check. One of the issues related to PR Laser Check printing are the margins and line spacing which must be setup correctly for the laser check to align correctly. One way you can set the margin is through preference setup. However, the margin you set will affect all printing for that workstation. Therefore, we have introduced two PR Check Laser Form Templates, one for Macola Form LC111, one for Macola Form LC111 New, with the margin and line spacing pre-set correctly. These two templates do not print any line draw, shading and bitmap. The only thing it does is to set the proper margin and line spacing for the proper form. To print a payroll check on laser printer, follow these steps:

- PR Main Menu -> Util_Setup -> P/R Setup -> Last Screen -> 10. Print Checks On Laser? -> Y

AP Check

Similar to PR Check, we have introduced one AP Check Laser Form Template. The purpose is to set the proper margin and line spacing and does not print any line draw or shading. To print a AP check on laser printer, follow these steps:

- AP Main Menu -> Util_Setup -> A/P Setup -> 34. Print Checks On Laser? -> Y

Customize Sample Laser Form for Yourself

The sample laser form templates delivered by NWSM use two bitmap files:

COMPADDR.BMP
COMPLOGO.BMP

These two bitmap files resides in \NSI directory, or whatever your NWSM startup directory may be. When NWSM access a company for the first time, it will check the necessary bitmap files to print the pre-defined forms exist in the data directory. If not, it will copy from \NSI directory to the proper data directory.

You may use the sample laser form template for your own use. However, the bitmap it prints is for "NETcellent System, Inc." The easiest way is to delete these two bitmap files from the data directory after NWSM access it for the first time. Then during the printing, system can't find these two bit map files, it simply does not print any bitmap. What you can do is to have letter head pre-printed with your company name and logo for the laser printing purpose.

The second option you have is simply to modify or create these two bitmap files in your data directory. You can use tool like Paint which come with Windows Operation System to make the necessary changes. The size of the bitmap file does not have to be identical to the sample one we provided. As long as the ratio is identical to our sample bitmap, system can stretch it to fit. The following is the ratio of the two bit map files:

File	Ratio Width:Height
COMPADDR.BMP	3:1
COMPLOGO.BMP	1:1

If you would like to change the template beyond just making simple changes to the bitmap files, then you will have to continue to read on for more information:

NWSMFORM.TXT File

The form templates are stored in NWSMFORM.BTR file (if you are using Micro Focus ISAM, they are stored in NWSMFORM.DAT and .IDX files) that reside in your data directory. If you are using the multiple company option, there will be a separate copy in each one of your data subdirectories.

When Elliott or NWSM is first installed, this file does not exist in your data directory. A NWSMFORM.TXT file comes with Elliott and NWSM and resides in either \ELLIOTT or \NSI directory. The first time NWSM accesses your data directory, NWSM will check if NWSMFORM.BTR file exists in the data directory. If not, the system will then create the NWSMFORM.BTR file by importing from the NWSMFORM.TXT file. Under the following situations, you will need to delete the NWSMFORM.BTR file from your data directory and let the system automatically create NWSMFORM.BTR from the NWSMFORM.TXT file: (1) There is an updated version of the NWSMFORM.TXT file from NETcellent, or from your reseller. (2) You have modified the NWSMFORM.TXT file and wish to apply the update to the NWSMFORM.BTR file.

NWSMFORM.TXT file layout

The NWSMFORM.TXT file is a line sequential ASCII file that can be edited through any editor. DOS EDIT command, or Windows NOTEPAD are available in most PC systems and can be used as the editor for changing the NWSMFORM.TXT file. You may want to edit the NWSMFORM.TXT file for (1) changing the default form template layout provided by NWSM; (2) Add a new form template.

In order for you to change or add a form, you need to understand the file layout of the NWSMFORM.TXT file. The following is a layout:

Field Name	Size	Starting Pos.	Ending Pos.	Value
Task Name	8	1	8	CPINVPRT, CP02P1...etc.
Form No.	2	9	10	01 – 99
Heading or Item Flag	1	11	11	H or I
Data Type	2	12	13	For “H”: OS, NL, NC, TM, BM, LM, RM, FN, LI, DT, DS, DL, C1 – C9. For “I”: SH, LD, NT, BT, IT, IB, BM, BC
Start Row	3	14	16	000 – 999
Start Column	3	17	19	000 – 999
Start Sub-Cell	1	20	20	1 – 9
End Row	3	21	23	000 – 999
End Column	3	24	26	000 – 999
End Sub-Cell	1	27	27	1 – 9
Special Color Flag	1	28	28	Y, N or Blank
Red Value	3	29	31	000 – 255
Green Value	3	32	34	000 – 255
Blue Value	3	35	37	000 – 255
Option	4	38	41	For text: BT, IT, IB For bit map image: I, S, N
Reference Value	50	42	91	Depends on data type

For Data Type = “BC” (Barcode), from position 1 – 27 is identical to previous table. The start row/column and end row/column determine the area where the bar code will be printed. Please be aware of that the actual bar code width printed will be somewhat smaller than your designated area. This is because of two reasons: (1) A leading and trailing space is reserved in the area you designated to ensure proper scanning; (2) Bar code printing routine will determine a proper density that does not exceed the area designated. Usually it will not exactly fit the space. However, for the height of the bar code, it will fit exactly as system designated. Please be aware that when you choose a bar code area that’s either too small or too big may become difficult for bar code reader to read it.

We support two type of barcode printing: (1) Absolute position bar code; (2) Relative position bar code.

Absolute position bar code:

This is bar code that will be printed at a fixed position of a page. This can be order number, zip code, customer number...etc. System will require the barcode input string as well as the barcode to be on an exact position. This typically will work well for any information in the header and footer area that need to be bar coded.

Relative position bar code:

This is usually bar code for the line items. For the line items of an invoice, picking ticket...etc. They do not appear on the same row all the time. Therefore, we can't identify the input string of the barcode at the same absolute position. The technique we use is to look for "Pattern". There's usually some kind of pattern for a line item that system can identify. For example, you can search for ??/??/?? (a date field) in the line item area of a picking ticket. The item number to be bar coded can be found on the same line where the date field (??/??/??) show up.

Whether system will use "Absolute" or "Relative" position barcode is determined by "Relative Pattern" field. If you leave this field blank (or null value), then system will use absolute position barcode. If you put a value into this field, then it implies you want to use relative position barcode. System will then search for such pattern to find the line of your bar code input string.

For Data Type = "BC", the record layout from position 28, please refer to the following table:

Field Name	Size	Starting Pos.	Ending Pos.	Value
Bar Code Type	2	29	30	0 – 12
Bar Code Ratio	2	31	32	20 – 30
Check Sum	1	33	33	0 - 1
Rotation	1	34	34	0 - 3
Input Row	3	35	37	000-999
Input Column	3	38	40	000-999
Input Length	3	41	43	000-999
Relative Pattern	20	44	63	Any Value
Relative Pattern Col.	3	64	66	000-999
Relative Starting Row	3	67	69	000-999
Relative Ending Row	3	70	72	000-999
Relative Placement	1	73	73	1 or 2

The following is an explanation of each field:

Task Name:

Task Name is the form or report printing program name. You can find this information in the print option window at the bottom right corner. If you see the print option window example in figure 2, you can see "CPINVPRT" is at the bottom right corner which stands for COP INVOICE PRINTING. Theoretically, Laser Form printing support is not limited to form programs only. For example, you may decide to include your company logo on the aging report heading right hand corner when currently it is blank.

Form No.:

For each Task Name, we support up to 99 different type of form template. At printing time, users can select the form template for this task and the system can remember this default for future printing. The value for this field is 01- 99.

Heading or Item Flag:

This field is either "H" or "I". "H" means "Heading" and controls the whole template form. "I" means "Item" and controls individual object on the template forms.

Data Type:

The following are the possible data types in the NWSMFORM.TXT file:

Code	H/I	Meaning	Comment
OS	H	Offset	Start-Row/Column store the vertical and horizontal offset. You need to use this because your application programs start to print from row 1 and column 1. Say, if you want to do a box around the outside border of your form, and row 1 and column 1 will be on the line draw, then you can specify the offset for the text printing portion so the text won't overlay on the line draw. If you need to do an offset, typically it is offset by a value of 1 for row, and/or, column.
NL	H	No. of lines per page	Value is stored in reference value field, (i.e. 62) since the form printing program typically does not perform form feed. Instead, it uses line feed to control advancing to the next page. It is important that the printing program needs to know how many lines per page for this form and the system can perform a form feed at the right position.
NC	H	No. of Columns	Value is stored in the reference value field. (i.e. 82) This value should include the form border and is important for the printing program to know what type of font and horizontal spacing to use when printing.
TM	H	Top Margin	Reference value is the margin in inches (i.e. 0.25)
BM	H	Bottom Margin	Reference value is the margin in inches (i.e. 0.50)
LM	H	Left Margin	Reference value is the margin in inches (i.e. 0.25)
RM	H	Right Margin	Reference value is the margin in inches (i.e. 0.25)
FN	H	Form Name	Reference value is the form name. (i.e. Standard Laser Invoice Form)
LI	H	Lines per inch	Reference value is the lines per inch (i.e. 6.4400). This value may be greater than 6 lines per inch depending on the top and bottom margin needs, as well as the number of lines per page.
DT	H	Default text color	Reference Value is the Black & White text value that will print on a black and white printer (i.e. 192). The value is between 0 – 255. Special color can be produced as well.*
DS	H	Default shading color	Reference value is the BW Shading value (i.e. 16) for BW printer. The value is between 0 – 255. "0" means no shading while "255" means complete darkness. Unless you wish to produce black background with white text effect, you will usually specify a value in this field not greater than 32. Special color can be produced as well.*
DL	H	Default line draw color	Reference value is the BW line draw color (i.e. 192) for BW printer. The value is between 0-255. Special color can be produced as well.*
C1-C9	H	Copy 1 – Copy 9	Reference value is the text that will be printed in the designated area for BW printer. For example, you may specify C1 = Original Copy C2 = Office Copy C3 = Salesman Copy Then for data type C1, you will put in the reference value area as "Original Copy". Same principle will apply to C2, C3...etc. You can have up to a maximum of 9 copies. Special color can be produced as well.*
SH	I	Shading	Reference value is the intensity. If reference value is left blank, then the default shading value will be used. Special color can be produced as well.* Shading is for a rectangle area that is specified by the starting column/row and ending column/row.

LD	I	Line Draw	Reference value can be "THIN", "MEDIUM" and "WIDE". You may use Line Draw to draw a box when the starting column/row and ending column/row indicates a rectangle area. Special color can be produced as well.*
NT	I	Normal Text	Reference value is the text (i.e. INVOICE#). Special color can be produced as well.*
BT	I	Bold Text	Reference value is the text (i.e. TOTAL). Special color can be produced as well.*
IT	I	Italic Text	Reference value is the text. Special color can be produced as well.*
IB	I	Italic/Bold Text	Reference value is the text. Special color can be produced as well.*
BC	I	Bar Code	Starting Row/Column and Ending Row/Column determine the printing area of barcode (Start = Top Left Corner, End = Bottom Right Corner). System will choose the barcode density that's closest to fit the area you designated. Record layout for "BC" type is different starting from position 29.
BM	I	Bit Map	Reference value is the file path and file name. \$DATA is a special symbol that refers to the dynamic data directory path as each company is being accessed. For example, you may specify file path as "\$DATA\COMPLOGO.BMP". Then the system will always go to the current company data directory to look for COMPLOGO.BMP. If you put the COMPLOGO.BMP file in your \NSI or \ELLIOTT start up directory, the system can even automatically copy COMPLOGO.BMP file to your data subdirectory if they do not exist. You can keep your form template identical for all companies while using a different COMPLOGO.BMP file for each company and produce a different invoice logo.

* Special colors can be produced by manipulating the field value for Red, Green, Blue. However, you need to turn on the flag "Special Color Flag" to "Y" so the system will use the value in Red, Green, Blue for this item. Otherwise, the system will use the default value specified in the heading area. Red, Green, Blue's value can range from 0-255 to designate the intensity of that color. Through the combination of Red, Green, Blue value, you will produce a color that's desirable for your printing. Red, Green, Blue value only controls color printers. For a non-color printer, it is controlled by the black and white intensity value as specified in the heading area.

Start Row:

This is a three-digit numeric value that determines the row number of the starting position.

Start Column

This is a three-digit numeric value that determines the column number of the starting position.

Start Sub-Cell

The value in this field is 1 – 9 to determine the sub-cell position. Each Row and Column will determine a cell position. To make the template form draw line and shading in a precise area, each cell is broken down further into 9 position like the following graph:

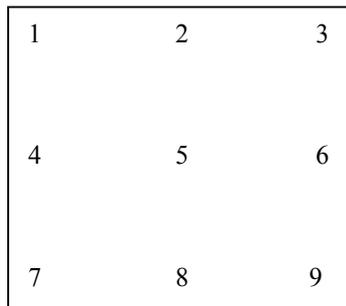


Figure 5. A cell is broken down into 9 positions.

If you do not specify the sub-cell value (by leaving it blank or 0), then the system assumes position 5. In some situations, there's no spacing between two lines or columns where you need to draw a line. You will then use sub-cell position 1, 3, 7, 9 to draw a line at the border of two columns or rows.

End Row

Like the start row, this is a three-digit numeric value that determines the row number of the ending position. If both the end row and column are different from the start row and column, then it has formed a rectangle area to either draw a box, an area for shading, and area for bar code, or an area for bit-map.

End Column

Like start column, this is a three-digit numeric value that determines the column number of the ending position. End row and column determine a unique ending cell.

End Sub-Cell

Like Start Sub-Cell, the value for this field is from 1 – 9 which determines a sub-cell position for the ending cell.

Special Color Flag

If you wish to use Red, Green, Blue values to determine a special color for this item, you need to set this flag to "Y". Leave this field "N" or blank indicating that the value for this item is determined by the heading default value.

Red Value

It is a value from 000 to 255 that determines the red intensity. This value will only affect printing on color printers.

Green Value

It is a value from 000 to 255 that determines the green intensity. This value will only affect printing on color printers.

Blue Value:

It is a value from 000 to 255 that determines the blue intensity. This value will only affect printing on color printers.

Option:

For a text item like C1 – C9, the value for this field can be:

- Blank or NT: Normal Text
- BT: Bold Text
- IT: Italic Text
- IB: Italic Bold

For a bit map image (BM), the value for this field can be:

- Blank, or "S": Stretch the bitmap image to fit the space defined.
- N or NS: No Stretch. Keep the bitmap image the same as its original size.
- I: Integral Stretch. Stretch proportionally to the bit map original ration.

Reference Value:

This is a text field of 50 bytes. A numeric value stored in this field in any common numeric presentation format will be acceptable.

Bar Code Type:

The is a two digit numeric field to represent the type of bar code that you wish to print. The type of bar code you choose depends on the kind of information you want to encoded, the printing space available, the degree of readability needed, and the scanning equipment you use.

When choosing a bar code type, make sure that your bar code reader has the ability to read it. The type of bar code reader you use is a major factor when considering problems and read-errors, although bar codes are also more prone to read-errors as they get very large or very small. The starting row/column/sub cell, and the ending row/column/sub cell determine the size of the barcode. This is the maximum area that the bar code will print and usually the width will be somewhat smaller than the area designated.

During the printing of bar code, if system detect there's some kind of error and can't not produce the bar code, it will print an error number in the position where the barcode should print. For a complete list of barcode code error number and explanation, please see appendix.

NWSM Laser Form Printing routine supports the following type of bar code symbology:

Value	Bar Code Type	Input Length	Encodes *	Char. per inch **	Comment
01	Code 39 Full (Extended Code 39)	2 – 50	U-L-D-C	3.3	Code 39 only supports 43 character. However, it can be extended to an 128 character symbology (full ASCII) by combining one of the special characters (\$, /, %, +) with a letter (A-Z) to form the characters that are not present in the standard Code 39 symbology. For example, in standard Code 39 a lowercase "a" cannot be represented. In Code 39 Full ASCII, however, "a" is represented as "+A".
02	Interleave 2 of 5	2 – 50	D	11	Interleaved 2 of 5 is a variable length, even numbered, numeric bar code. It is typically used in industrial and master carton labeling. The symbology uses bars to represent the first character and the interleaved (white) spaces to represent the second character. Each character has two wide elements and three narrow elements. Check digit is supported. However, if the checksum is added, the input string needs to be odd (the checksum adds one character, making it even).
03	Codabar	2 – 50	D	9	Codabar is a variable length symbology capable of encoding 16 characters within any length message. Codabar can encode six special alphanumeric characters, capital letters A through D, and all numeric digits. Codabar symbology for any new applications today should not be considered except under unusual circumstances.
04	MSI Plessey	2 - 50	D	8.3	MSI Plessey is a variable length numeric symbology. Each character consists of four bars with intervening spaces for each encoded digit, one or two symbol check digits, and a reverse start code. MSI Plessey is primarily used in marking retail

					shelves.
05	Code 93 Full (Extended Code 93)	2 – 50	U-L-D-C	5.6	Code 93 encodes the full 128 ASCII character set using 9 modules arranged into 3 bars with adjacent spaces. Two of the characters are check characters. Code 93 is similar to Code 39 but encodes more characters per inch. Code 93 is not quite as easy for bar code readers to read because the way it is encoded. Code 93 encodes the full 128 ASCII character set and is encoded similarly to the extended Code 39.
06	UPC-A	11, 13, 16	D	14	UPC-A (Universal Product Code-A) is fixed length and is the most common UPC bar code for retail product labeling and is seen in most grocery stores across the United States. The symbology encodes a 12 digit numeric only number. The first six digits are assigned from the Uniform Code Council (UCC) in Dayton, Ohio, the next five digits are assigned by the manufacturer, and the final digit is a modulo 10 check digit. The nominal height for the UPC-A bar code is one inch. The reduced size is 80% of the nominal size.
07	UP-E	11, 13, 16	D	25	UPC-E (Universal Product Code-E) is also fixed length and is a compressed six digit code used for marking small packages including magazines and paperback books. UPC-E symbols are UPC-A symbols that have been zero suppressed (i.e. consecutive zeros are not included in the symbol). The printed value of the UPC-E code is a twelve digit code. The nominal height for the UPC-A bar code is one inch. The reduced size is 80% of the nominal size.
08	PostNet	5, 9, 11	D	4.2	Postal Numeric Encoding Technique used to encode ZIP code information on letter mail. PostNet utilizes redundant information within a compact bar code format to provide error detection capability and a significant degree of error correction capability. The check digit is always enabled.
09	EAN/JAN-8	7, 9, 12	D	14	The EAN/JAN-8 is fixed length and is similar to the UPC-E code, but includes two more digits for the country code. The nominal height for the EAN/JAN-8 bar code is one inch. The reduced size is 80% of the nominal size.
10	EAN/JAN-13	12, 14, 17	D	14	The EAN/JAN-13 is fixed length and is similar to the UPC-A symbology, but encodes a 13th digit. The 12th and 13th digit define the country code. The code

					00-04 and 06-09 are assigned to the United States. The nominal height for the EAN/JAN-13 bar code is one inch. The reduced size is 80% of the nominal size.
11	Code 128	2 – 50	U-L-D-C	9	Code 128 is variable length and encodes the full 128 ASCII character set. Each character is represented by 11 modules that can be one of four bar widths. Code 128 is the most easily read code with the highest message integrity due to several separate message check routines. Of all the common linear symbologies, Code 128 is the most flexible. It supports both alpha and numeric characters easily, has the highest number of characters per inch, and is variable length. Code 128 is usually one of the best choices when implementing a new symbology.
12	Code 39 Standard	2 - 50	U-D	6.7	Code 39 is variable length and is the most frequently used symbology in industrial bar code systems today. The principal feature is to encode messages using the full alphanumeric character set. Standard Code 39 contains only 43 characters (0-9, A-Z, \$, /, %, +). Check digit is supported.

* U = uppercase, L = lowercase, D = digits, C= control characters

** Based on a 100 dpi resolution printer and the narrowest bar is 1 dot wide.

Ratio:

This is a two digits numeric field value from 20 to 30. It represents the ratio of the width of the wide bar to the width of the narrow bar. 20 means 2.0 to 1 while 30 means 3.0 to 1. The default is 3.0 to 1.

Checksum:

You may optionally add checksum digit to certain bar code symbology. Put a value 0 here means no Checksum and 1 means add checksum digit.

Rotation:

This is a 1 digit numeric field. You would normally print bar code horizontally from left to right. However, you may rotate it with the following value in this field:

- 0 – No rotation
- 1 – Rotate 90 degree counter clock wise
- 2 – Rotate 180 degree counter clock wise
- 3 – Rotate 270 degree counter clock wise

Input Row:

Input row/column/length identify the source of the string to produce the barcode. If it is for relative position barcode, then this field is insignificant because the input row has to be the same row as the row system find the pattern specified. This may be an order number, PO number, item number or customer number. Form may be shifted horizontally and vertically to accommodate border. The row/column you should put into here is the original row and column of data before it is shifted. You can find out this information by printing the document you need and spooled to disk. Bring up the spooled form with an editor and you should be able to determine the exact position of your input data. Keep in mind that we currently may not be able to support bar coding a line item if its position is not fixed relative to the beginning of the page.

Input Column:

See Input Row.

Input Length:

See Input Row. You need to make sure the length you choose can be supported by the bar code type you choose. Certain bar code types are fixed length and required appropriate number of input digits.

Relative Pattern:

If you leave this field blank, that means the bar code is absolute position barcode to the whole page. Sometimes, you may want to print a barcode for each line item's item number. The item number is not a fixed row position of the page. However, they are always at a fixed column position. To print a barcode for the item, system first need to know how to find the line where the item print. Usually, there's some kind of pattern you can specify to system search for it. For example, you may specify the following pattern:

??/??/??

Where ? mark will match any character. For example, we know on each line item, a request date will be printed at column 10. Therefore, whenever system find this pattern in a page at column 10, then system will know this is the line item line. From there, we can find the item number to print barcode.

Relative Pattern Column:

This field indicates the relative pattern will appear from which column. You don't need to specify length because length is implied by the pattern you specified.

Relative Starting/Ending Rows:

The relative position barcode is used mostly for the line items. Therefore, system should not search for the header and footer area for the pattern. These two fields is used to specify the range of rows for the line items to find the pattern.

Relative Placement:

The possible value for this field is 1 or 2 where:

1 = Relative Placement-Below

2 = Relative Placement-Above

When you are trying to print a relative position barcode, the starting row and ending row you specify is relative to the pattern line you find. You can print the barcode below or above the pattern line. The starting row number indicates the relative number of line above or below the pattern line where the barcode will be printed. Same principle applies to endin row.

Suggested Steps for Designing a New Form

Let's take the example of designing a new template form for invoices, we suggest you take the following steps to achieve the result. We suggest you open two windows (or use two machines) for best results:

- (1) Print a sample invoice with your desirable design (text only) to the disk. Use your editor to bring up that spooled invoice file. We will refer to this screen as Window-1 later.
- (2) Use your favorite editor to bring up the NWSMFORM.TXT file in the \NSI or \ELLIOTT directory either in a different window, or on a different PC. Copy from a sample form like CPINVPRT01. Change the newly copied lines for form number field from 01 to say 02 as the new form number. Remove all lines that are an "I" type of line. Review "H" type of lines and determine if any change is necessary. We will refer to this screen as Window-2 later.
- (3) Go to Windows-1 and determine if you need any offset for this template. If you wish to draw an outside box as the border for your invoice, does your invoice start to print from line 1 or column 1? If so, you will need to do an offset. Determine the offset value (i.e. horizontal 1, vertical 1), then insert the column or row to push the text to the final position after the offset. Go to Window-2, change the offset value if it is different.
- (4) In Windows-1 start to draw each object like line, box, shading, text or bitmap. As you draw each object, insert the line that represents the object in Windows-2.
- (5) After you complete the drawing and updating of Windows-1 and Windows-2. Save both files and exit.
- (6) Delete NWSMFORM.BTR from your DATA directory. Then startup NWSM. NWSMFORM.BTR will be automatically created based on the data in the NWSMFORM.BTR file. Test the template form you just created and see if it works properly.
- (7) If there are any changes necessary, repeat steps (4) – (6) until the desirable printing output is achieved.

Estimate Amount of Time for Designing a New Laser Form

If you take the above steps to design a new laser form, for an experienced designer, it will take approximately 4 hours. If this is the first time you are trying to design a new form, it may take you 8 hours or even more for the first time.

To change a form's literal value, or some other minor change will take between 5 – 10 minutes. If you need to reposition literal, line draw, or shading area, then it will take a lot longer to figure out the relative position of each item.

Appendix A. Bar Code Error Codes and Descriptions

Outlined below is a complete list of bar code printing error codes and their respective descriptions.

32500

Incomplete number of UPC-A characters, must be 11, 13 (2 Digit supplement) or 16 (5 Digit supplement) digits.

32501

Incomplete number of UPC-E characters, must be 6, 8 (2 Digit supplement) or 11 (5 Digit supplement) digits.

32502

Incomplete number of EAN/JAN characters, must be 7, 9 (2 Digit supplement) or 12 (5 Digit supplement) digits.

32503

Incomplete number of EAN/JAN characters, must be 12, 14 (2 Digit supplement) or 17 (5 Digit supplement) digits.

32504

Incomplete number of PostNet characters, must be 5, 9 (Zip+4) or 11 (Zip+4+DP) digits.

32505

Illegal character for this symbology.

32506

Illegal character for this symbology. Character must be in ASCII range 0...127.

32507

Illegal character for this symbology. Character must be numeric.

32508

Illegal character for this symbology. First digit must be a '0'.

32509

Missing a required placement of one or more zeros for UPC-E.

32510

Too many characters for this symbology.

32511

Software Logic error, unknown symbology type.

32512

Returned string too long for given buffer.

32513

Software Logic error, contact manufacturer.

32514

Bar code value does not translate into a valid symbol for the current symbology.

32515

Invalid device context specified.

32516

Invalid bar code symbology specified. Check documentation for valid range.

32517

Invalid bar code ratio specified. Check documentation for valid range.

32518

Invalid rotation specified. Check documentation for valid range.

32519

Invalid magnification specified. Check documentation for valid range.

32520

Invalid units specified. Check documentation for valid range.

32521

Invalid bar width specified. Check documentation for valid range.

32522

Invalid bar height specified. Check documentation for valid range.

32523

An error occurred while attempting to create the specified font.

32524

An error occurred while attempting to select the specified font.

32525

An error occurred while attempting to draw the caption text.

32526

Software Logic error, unexpected character encountered in translation output string.

32527

Given character is not supported in Demo version of the software.

32528

Feature unsupported in Demo version of the software.

32529

Out of memory.

32530

A required DLL could not be loaded.

32531

The specified data will not fit in a PDF417 symbol. The maximum size of PDF417 symbol is approximately 2700 characters, if error correction level zero is used. The higher the error correction level, the fewer data characters can be used. Decrease the error correction level, or split your data into 2 or more separate bar codes.

32532

Error generating EDAC for a PDF417 symbol. Contact manufacturer.

32533

Error generating data codewords for a PDF417 symbol. Contact manufacturer.

32534

Error generating symbol character for MaxiCode symbol. Contact manufacturer.

32535

The data characters would not fit in the symbol. Try decreasing the length of the input data or changing the mode to four (4) to increase the message capacity.

32536

Invalid MaxiCode mode. Range is 2 through 6.

32537

Error generating the primary and secondary messages. Contact manufacturer.

32538

Error drawing the MaxiCode center bullseye. Contact manufacturer.

32539

Error drawing the MaxiCode modules. Contact