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# BENS G3

## PCL Barcode Filter

**Manual**

Suchy MIPS



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## 1 Introduction

The **BENS G3 PCL Barcode Filter** is a filter, which generates Barcode Images from standard PCL-commands. Many application, like ERP systems use this commands automatically and BENS G3 can be used as a plug&play solution for all PCL printers. Anyway, this manual describes the syntax of PCL Barcode commands.

## 2 Installation of the PCL Barcode Filter

To install the PCL Barcode Filter on **BENS G3**, choose **Configuration/Filters** and click on **Add Filters** in order to upload the filter. Afterwards, upload the licence choosing **Management/Licences**. Click on **Explore**, select the licensed file and click on **Import licence file**. Finally assign the filter to a virtual printer. For more details refer to the manual of **BENS G3**.

**Note:** *Assigning a filter to a virtual printer consumes one licence. The number of available licences can be checked using **Configuration/Filters**. The used and available licences are displayed in the "Virtual Printers" line.*

### 2.1 Assigning the barcode filter to a virtual printer

Installed filters only work on virtual printers to which they were assigned. To assign the barcode filter to a virtual printer, proceed as follows:

- Choose **Configuration/Virtual Printers**
- Click on the name of the virtual printer to come to the edit dialog.
- Click on **Add filter** and select **Barcode**.
- The barcode filter appears in the list of active filters assigned to the selected virtual printer.

The screenshot shows the BENS+U v2.0.4 web interface. The top navigation bar includes 'Status', 'Management', 'Configuration', 'Help', and 'Logout'. The left sidebar shows the 'Configuration' menu with 'Virtual Printers' selected. The main content area displays the 'Virtual Printers' configuration for a printer named 'VD1'. The 'Filters' section is highlighted with a red box, showing a table with columns 'Name', 'Filter config', and 'Operations'. The 'Barcode' filter is listed with a dropdown menu and a 'Delete' button. Below the table is an 'Add filter' dropdown button. The 'Description' field is empty. The 'Save' and 'Clone' buttons are at the bottom.

Name	Filter config	Operations
Barcode	[Dropdown]	Delete

## 2.2 Uploading a barcode configuration file

The barcode filter supports the use of a barcode configuration (it is not assigned by default). The purpose of this file is to get an additional influence on the output data without making any changes to the printing application. For example, the barcode can be rotated or printed in another resolution (default is 300 dpi).

An example of a configuration file is located on the CD delivered. To upload a configuration file, proceed as follows:

- Choose **Configuration/Filters** and click on **Barcode** in the "Name" row
- Click on **Add config file**
- Click on **Explore** and select the configuration file.
- Assign a name in the field **Config file description**. This name will be used by the system to identify the filter.
- Click on **Update config file**.
- The new configuration file appears in the list of available configurations.

**Note:** An unlimited number of config files may be uploaded. The same config files may be assigned to filters on different virtual printers.

The image shows two screenshots of the BENS+U v2.0.4 web interface. The top screenshot shows the 'Filters' configuration page. The 'Config file description' field is highlighted with a red box and contains the text '600 dpi Barcodes'. Below it, the 'Config file path' field contains 'V:\ARBEIT2004\CD Akt' and a 'Durchsuchen...' button. An 'Update config file' button is also visible. The bottom screenshot shows the 'Filters' list page. A table lists the filters, with the '600 dpi Barcodes' entry highlighted by a red box. The table has columns for 'Name' and 'Operations'. The 'Operations' column for the highlighted entry contains 'Delete' and 'Add config file' buttons. The interface includes a navigation menu on the left with options like Settings, Network, Printers, Virtual Printers, Filters, Import / export, and Password. The top navigation bar includes Status, Management, Configuration, Help, and Logout. The footer of the interface contains the copyright notice '© 2005, 2008 Suchy MIPS'.

### 2.3 Assigning a barcode configuration to a virtual printer

To assign a barcode configuration to a virtual printer, proceed as follows:

- Choose **Configuration/Virtual Printers**
- Click on the name of the virtual printer.
- Click on the field next to the **Barcode** filter and select a configuration.
- Click on **Save** to make the changes permanent.

**Note:** *One configuration may be assigned per filter and virtual printer but different configuration files may be assigned to the same filter on different virtual printers*

### 2.4 Deleting a barcode configuration file

A barcode configuration file may be deleted only if it is not assigned to any virtual printer. If you need to delete a configuration, you have to release the assignment from all virtual printers to which this configuration has been assigned.

- Choose **Configuration/Filters** and click on **Barcode** in the "Name" column
- Click on **Delete** in the "Operations" column.

### 2.5 Downloading a barcode configuration file

- Choose **Configuration/Filters** and click on **Barcode** in the "Name" column.
- Click on **Download** in the "Operations" column. Depending on the browser used, you can open the file directly or download it to the local system. After downloading, the file can be opened by any editor, such as Notepad.exe.

### 2.6 Changing a barcode configuration file

Changing barcode configurations files should be done locally, outside of **BENS**. Afterwards, the new configuration must be uploaded to **BENS**.

## 2.7 Updating a barcode configuration file

An existing configuration file may be updated, even if it is assigned to virtual printers:

- Choose **Configuration/Filters** and click on **Barcode** in the "Name" column.
- Then click on the name of the barcode configuration which has to be updated. In the next dialog, the "Config file description" field will be automatically filled out with the name of the chosen configuration.
- Click on **Explore**, select the new config file and click on **Update config file**.

**Note:** *This is the only way to update an existing configuration. If you choose **Add config file** instead of clicking on the name of the configuration and choose an existing name for the new config file, an error message will appear and the configuration file will not be imported.*

## 2.8 Syntax description of barcode configuration files

A barcode configuration is an XML file with predefined properties which are described as follows.

### Example of a barcode configuration file:

---

```
<?xml version="1.0" encoding="iso-8859-2"?>
<BCESIMM version="2.0">
  <CONFIG>
    // Here you can force printer DPI
    <DPI>300</DPI>
    // This is token instead of real escape character
    <ESCAPE_TOKEN>$ESCAPE$</ESCAPE_TOKEN>
  </CONFIG>
  <REPLACEMENTS>
    <REPLACEMENT>
      <PATTERN>(s1p37v24630T</PATTERN>
      <REPLACE_FOR>(s37v1p11,22,34,45s11,22,34,45b24630T</REPLACE_FOR>
      <OFFSET x="2" y="15" unit="millimeter" />
      <ROTATION>0</ROTATION>
    </REPLACEMENT>
    <REPLACEMENT>
      <PATTERN>(s1p37v24631T</PATTERN>
      <REPLACE_FOR>(s37v1p11,22,34,45s11,22,34,45b24631T</REPLACE_FOR>
      <OFFSET x="2" y="15" unit="millimetre" />
      <ROTATION>0</ROTATION>
    </REPLACEMENT>
  </REPLACEMENTS>
</BCESIMM>
```

---

#### Description:

**Texts marked in red** are fixed statements which the user is not allowed to change.

**Texts marked in blue** should also not be changed by the user. They are tags including special instructions (marked in green). The users can change output options using these instructions.

**Texts marked in green** are subject to change by the users.

<b>Config:</b>	General settings concerning output by using a virtual printer.
<b>DPI:</b>	Resolution of the barcode graphics. Default is 600 dpi.
<b>ESCAPE_TOKEN:</b>	Each PCL command begins with an Escape character, which has the value 32 (hex 1B). Because this is a value under 32, thus not in the default ASCII range, not all applications can handle it. To make printing barcodes with <b>BENS</b> available for such applications, you can redefine the Escape 0x1B with any string. <b>BENS</b> then parses the printing data stream using this Escape value.
<b>Replacements:</b>	Changes which apply only to some barcodes. There is no limitation to the amount of defined replacements.
<b>Pattern:</b>	<b>BENS</b> searches for a string defined here and replaces it with the string found under "Replace_for".
<b>Replace_for:</b>	This string uses <b>BENS</b> for generating the barcode instead of the string found in the printing data stream and defined under "Pattern".
<b>Info:</b>	Replace and Replace_for are useful in two cases: sometimes the barcode definition is very long, but the users can insert such a long definition in their application (e.g. SAP users are limited to 70 characters). In this case, users can define a shorter command and declare it under "Pattern". The proper barcode definition can then be defined under "Replace_for". Another case given, if you want to identify a barcode for making some changes on the barcode (e.g. rotation). In this case, the string defined under "Pattern" and "Replace_for" should be the same and the appropriate changes should be defined under the right tags.
<b>Offset:</b>	With this parameter, the barcode can be moved. X → horizontal direction Y → vertical direction "millimetre" and "inch" can be used as units.
<b>Rotation:</b>	With this parameter, the barcode can be rotated in 90 degree steps. Valid values are 0, 90, 180 and 270

## A1 PCL commands for barcodes

**BENS** generates barcodes taking information about their properties from a PCL command. The user has to take care that such commands inserted, for example, in applications, are passed in one part to the printer.

Good knowledge of PCL is an advantage, but not required. On the following pages, we will describe how to create PCL commands for barcodes.

Barcodes which have to be generated by **BENS** come from PCL commands which are similar to PCL font commands.

Example of a typical PCL font command:

```
Esc(s0p1s3b10v12h3T
```

This command sets the font Courier, 12 Pt., 10 CPI, bold, italic.

The property information is set by values which follow standard parameters. Each parameter is represented by an alphabetic character, followed by an appropriate value.

**Attention!** Each PCL command begins with an "Escape" "Escape" = 27 or. 0x1B hex. Optional rule for **BENS**: tilde "~". All parameter characters inside the PCL command have to be in **lower case**. The last character must be a **capital letter** for recognising the end of the command.

**Esc(s** start of font settings

"Esc" means "Escape", which represents the value 27dec = 0x1Bx. "(s" indicates the command and is obligatory.

- 0p** "p" means "pitch",  
"0" means fixed pitch (fixed character spacing).
- 1s** "s" means "style",  
"1" means "italic"
- 3b** "b" means stroke,  
"3" means "bold"
- 10v** "v" means font height in Pt.,  
"10" means 10 Pt (= 10/72 inch).
- 12h** "h" means characters per inch,  
"12" means 12 characters per inch (12 cpi)
- 3T** "T" means the font type,  
"3" means Courier.

For defining barcode properties, the meaning of the parameters has been changed. Some parameters like “style“ or “stroke“ are not required. Instead of this, another property should be defined. In general, the structure of a PCL font command fits requirements for settings barcode properties quite well.

For a wide range of barcodes, the same parameters describe the same property. For new developments, like 2D-barcodes or 4-state-barcodes, the same parameters may describe different properties.

In the following, the structure of PCL barcode commands will be described. Barcodes will be divided into groups in which the same parameter describes the same property.

**NOTE:** *PCL-Barcode Commands may be generated automatically using the program "PCL Barcode Designer" which is on the delivered CD*

### A1.1 The meaning of PCL parameters at 1D barcodes

**1D barcodes** are classic barcodes composed of bars and spaces.

Up to the barcode symbology, barcodes consist of 2 or 4 different wide bars and spaces. This property will be described in the table in Chapter A1.3.

For selecting the appropriate symbology, the parameter “T“ has to be used. All other parameters are optional. For any undefined parameter, a default value will be taken from the table in Chapter A1.3.



The description of a barcode parameter inside a PCL command will be described below:

**B** width of bars in 600 dpi measure units

**Info:** *The width of bars has to be defined in front of the parameter character, separated by a comma (e.g. 10,20,30,40b). Up to the symbology 2 or 4 values are required. If no values defined **BENS** will use a default value from the table in Chapter A1.3. The number or required values can also be found in the table in Chapter A1.3. The measurement unit for this value is 1/600 inch (independent of recent printer resolution). 1 = 1/600 inch or 0.04233 mm. For example, to generate an approx. 1mm wide bar, the value 23 is required.*

**Attention! :** *The width of bars and spaces must always be defined in a 1/600 inch unit, even if the barcode graphic is generated with 300 dpi.*

**S** width of spaces in 600 dpi measure units

**Info:** *The width of bars has to be defined in the front of the parameter character, separated by a comma (e.g. 10,20,30,40b). Up to the symbology 2 or 4 values are required. If no values are defined **BENS** will use a default value from the table in Chapter A1.3. The measurement unit for this value is 1/600 inch (independent of recent printer resolution). 1 = 1/600 inch or 0.04233 mm. For example, to generate an approx. 1mm wide bar, the value 23 is required.*

**Attention!** *Important rules on how to define widths of bars and spaces:*

- *Usually, the width of a bar should equal the width of the space of the same type. e.g. 10,20,30,40b10,20,30,40s. Other definitions are possible, but can cause the barcode to become unreadable.*
- *The aspect ratio (relation between thick and thin bar/space) for barcodes with 2 widths must be in the range 2:1 and 3:1. Example: 20,50b20,50s.*
- *The relation between the width of bars/spaces for barcodes with 4 different elements should be like 1:2:3:4. Example: 10,20,30,40b10,20,30,40s*

**Advice to find proper values for bars and spaces:**

Normally, the user has the job of generating a barcode by a given width of the whole label and number of characters or digits which have to be encoded.

- Generate a barcode with an average value keeping the rules described above, e.g. 10,20,30,40b10,20,30,40s.
- Measure the width of the barcode and find out the relation between the required width and the recent width
- Change the values for bars and spaces in the same relation.

**Example:**

The barcode label with barcode 39 without check sum, 60 mm wide is required. As an example of a value for encoding, 12345678 was declared.

- Print a barcode with following parameters:10,26b10,26s and encode the value “12345678“
- The printed barcode label has a width of about 65 mm. The relation between the requested width (60 mm) to the real width (65 mm) is  $60/65 = 0.92$ .
- Now change the width of bars and spaces in the same relation 1:0,92.  
New values are: 9,24b9,24s
- If you print the barcode now with the new values, the width of the barcode label should be about 60 mm.

**V** Height of the barcode in points (1/72 inch)

The height should be defined in typographical points (1/72 inch). This means that “72v“ generates a barcode width 1 inch height.

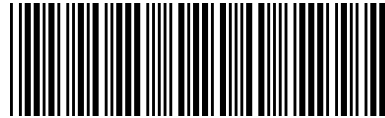
**Info:** *The value “v” concerns the height of the barcode only. If Human Readable Text (HRT) is to be printed.*

**P** Information about how to print Human Readable Text (HRT)  
The range for this parameter is 0 through 5.

Description of allowed values

**0** Default setting (from the table in Chapter A.1.3)

**1** No HRT



**2** Embedded HRT.



**3** Half-embedded HRT.



**4** HRT under the barcode.



**5** HRT over the barcode.



## **H** Formatting of HRT.

This parameter consists of 3 digits, Z1, Z2 and Z2, which have to be written next to each other (Z1Z2Z3h, e.g. 111h) They have the following denotation:

Z1 = Stroke,

Z2 = Font size,

Z3 = Font type.

The value range for Z1, Z2 and Z3 is as follows:

### **Z1** (Value)

0 = default (bold)

1 = normal

2 = italic

3 = bold

4 = bold italic

### **Z2** (Font size)

0 = Font size will be calculated automatically by **BENS**

### **Z3** (Font type)

0 = Courier (default)

1 = SM Gothic

2 = Unit

3 = Unit Condensed

4 = Roman

5 = OCR-B

## **T** Barcode type (Symbology).

The parameter "T" select the barcode type (symbology), which should be generated.

**Attention!** *The parameter "T" must always be placed at the end of the PCL barcode command.*

**Info:** *The parameter "T" is obligatory und must be declared. Other parameters are not obligatory. If they are missing, the default value applies.*

## A1.2 The meaning of PCL parameters for 2D barcodes

### A1.2.1 PDF-417

#### PDF-417



**T** 24850

**P** ECC Level (values between 0 through 8, default = 1).

**B** 4 values can be set e.g. 39,7,0,0b

**value 1:** maximum number of rows for the symbol

**value 2:** maximum number of columns for the symbol

**value 3:** type of the interpretation of values 1 and 2  
**if "0"**, then values 1 and 2 mean the max. allowed size of the symbol. The size of the symbol can differ up to the amount of encoded data.

**if "1"**, then the number of rows and columns is obligatory. The symbol will always have the same size, data will be filled with a pathword if necessary.

**value 4:** **if "0"** (=default), the full symbol will be printed.  
**if "1"**, the symbol will be printed truncated (without right border).

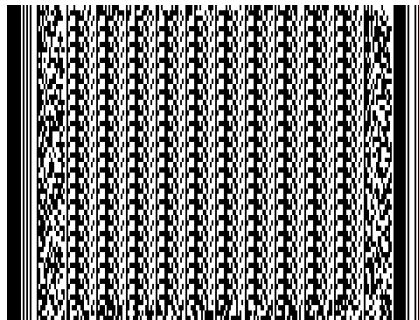
## S

**value 1:** through **value 3:** reserved

**value 4:** height of the smallest module in 1/100 inch  
(default: 10). Range from 1 through 100

### Examples:

```
Esc(s4p60,10,0,0b24850TABCDEFHabcdeFGH1234567890Esc(sspb3T
```



```
Esc(s24850TABCDEFHabcdeFGH1234567890Esc(sspb3T
```



### A1.2.2 Datamatrix

#### DataMatrix



**T** 24820

**B** value 1: Height of the smallest module in 1/600 inch

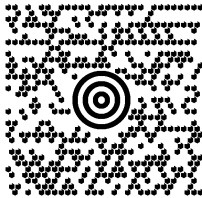
**Example:**

```
Esc(s16b24820T1234567890ABCDabcdEsc(sspb3T
```



### A1.2.3 Maxicode

#### UPS MaxiCode



The UPS MaxiCode is a barcode which uses only the parameter “T”. The barcode has a fixed size.

**Attention!** *It is very important to know that the barcode requires a structured data input for encoding.*

#### T 24800

Data structure of UPS MaxiCode:

**Part 1 - Primary Message:** In this part, the fields have to be separated by a comma

1. Label number (in this example: **1**)
2. Number of labels for transport (in this example: **1**)
3. Number of labels for transport (in this example: **2**)
4. Postal code (in this example: **81929**)
5. Country code (in this example: **049**)
6. Service class (in this example: **001**)

**Part 2 - Secondary Message:** In this part, fields have to be separated by a separator: either <GS> or. <RS>

1. Separator **])><RS>**
2. Data transport Format Head **01<GS>96**
3. Transport number (for example: **444Z0000555<GS>**)
4. SCAC: **USPN<GS>**
5. UPS Transport number (for example: **01X100<GS>**)
6. Date of delivery (for example: **300<GS>**)
7. Transport number (for example: **1122334<GS>**)
8. Packet n/x (for example: **1/1<GS>**)
9. Weight (for example: **17<GS>**)
10. Address validity (for example: **Y<GS>**)
11. Address (for example: **RIEMERSTR 22<GS>**)
12. City (for example: **MUENCHEN<GS>**)
13. State (for example: **GE<GS>**)
14. Format end-character (**<RS>** ASCII30)
15. End of translation (**<EOT>** ASCII 04)

Description of separators:

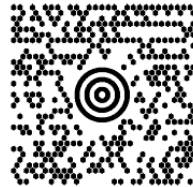
<GS> = ASCII29,  
<RS> = ASCII30,  
<EOT> = ASCII04

**Attention!** Separators <GS>, <RS> and <EOT> have to be sent as binaries.

**Example:**

**Attention!** The following command must be sent as one line (without LF/CR).  
Because there is not enough place, we have divided the command into more lines for better view only.

```
<ESC>(s24800T  
1,1,2,81929,049,001,[])><RS>01<GS>96444Z0000555  
<GS>UPSN<GS>01X100<GS>300<GS>1122334<GS>1/1<GS>17<GS>Y  
<GS>RIEMERSTR 22<GS> <GS>MUENCHEN<GS>DE<RS><EOT>  
<ESC>(s4099T
```



**Attention!** The *Secondary Message* shall not be longer than 82 Bytes. Thus, the destination address must be truncated if the length of the *Secondary Message* exceeds 82 Bytes. If the *Secondary Message* is too long no barcode will be generated.

### A1.2.4 OMR

#### OMR



**T** 24899

**V** Length of bars 1/60 inch

**B** Width of lines in 1/600 inch

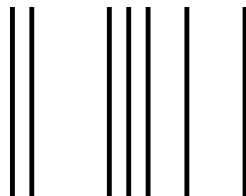
**S** Space between bars in 1/600 inch

**Example:**

```
Esc(s14v1p12s12b24899T00101110001Esc(sspb3T
```



```
Esc(s70v1p14,44,18,24s14,44,18,24b24899T00101110001 Esc(sspb3T
```



### A1.2.5 QR Code

#### QR Code



**T** 24860 Model 1 and 24861 Model 2

**B** Height/width of the smallest module in 1/600 inch

**P**

0	Default error correction 5% (M)
1	Low ECC/ High Density level (L)
2	Default ECC level (M)
3	High reliability/ECC level (Q)
4	Ultra High reliability/ECC level (H)

**S** Character set

0	Default (JIS/ShiftJIS)
1	Numerical data (0 through 9)
2	Alphanumeric data (0 through 9, A through Z, Space \$%*+-. /: )
3	Binary data 8 bits per Byte (JIS 8-bit char. set )
4	Kanji chars(Shift JIS values 8140h through 9FFCh and E040h through EAA4h moved from JIS X0208)

#### Example:

Esc(s1s24860T123Esc(sspb3T



### A1.2.6 Aztek

**Aztek**



**T**: 24830

**B**: Height/width of the smallest modules in 1/600 inch

**P**: Default ECC level in %

**Example:**

```
Esc(s70p30b24830TAztecEsc(sspb3T
```



**A1.3 List of default parameter values**

Name	T	V	P	B1	B2	B3	B4	S1	S2	S3	S4
USPS ZEBRA	23591	22.5 (fix)	1	112	N/V	N/V	N/V	112	N/V	N/V	N/V
UPC-A	24600	74.4	3	8	16	24	32	8	16	24	32
UPC-A +2	24601	74.4	3	8	16	24	32	8	16	24	32
UPC-A +5	24602	74.4	3	8	16	24	32	8	16	24	32
UPC-E	24610	28.8	3	8	16	24	32	8	16	24	32
UPC-E +2	24611	28.8	3	8	16	24	32	8	16	24	32
UPC-E +5	24612	28.8	3	8	16	24	32	8	16	24	32
EAN/JAN-8	24620	50.4	3	8	16	24	32	8	16	24	32
EAN/JAN-8 +2	24621	50.4	3	8	16	24	32	8	16	24	32
EAN/JAN-8 +5	24622	50.4	3	8	16	24	32	8	16	24	32
EAN/JAN-13	24630	74.4	3	8	16	24	32	8	16	24	32
EAN/JAN-13 +2	24631	74.4	3	8	16	24	32	8	16	24	32
EAN/JAN-13 +5	24632	74.4	3	8	16	24	32	8	16	24	32
2/5 interleaved	24640	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V
2/5 interleaved with check sum	24641	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V
Deutsche Post 2/5 Sort code 13	24642	72.0	124	10	30	N/V	N/V	10	30	N/V	N/V
Deutsche Post 2/5 Identcode 11	24643	72.0	124	10	30	N/V	N/V	10	30	N/V	N/V
USPS Tray Label	24644	50.4	4	9	27	N/V	N/V	9	27	N/V	N/V
USPS Sack Label	24645	50.4	1	9	27	N/V	N/V	9	27	N/V	N/V
2/5 industrial	24650	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V
2/5 industrial with check sum	24651	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V
2/5 matrix	24660	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V
2/5 matrix + PZ	24661	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V
Code 39	24670	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V
Code 39 with check sum	24671	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V
Code 39 plus space before and after the date	24672	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V
Code 39 with check sum and space before and after the date	24673	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V
Danish Post 39	24675	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V
French Post 39 A/R	24676	36.0	124	6	18	N/V	N/V	6	18	N/V	N/V
Code 39 extended	24680	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V
Code 39 extended with check sum	24681	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V

BENS G3 Barcode Filter

Name	T	V	P	B1	B2	B3	B4	S1	S2	S3	S4
Code 93	24690	28.8	1	6	12	18	24	6	12	18	24
Code 93 extended	24691	28.8	1	6	12	18	24	6	12	18	24
Code 128 autoswitch	24700	28.8	1	8	16	24	32	8	16	24	32
Code 128 A	24701	28.8	1	8	16	24	32	8	16	24	32
Code 128 B	24702	28.8	1	8	16	24	32	8	16	24	32
Code 128 C	24703	28.8	1	8	16	24	32	8	16	24	32
Code 128 C	24704	28.8	1	8	16	24	32	8	16	24	32
UCC-128	24710	28.8	5	6	12	18	24	6	12	18	24
EAN 128	24720	28.8	1	8	16	24	32	8	16	24	32
Codabar	24750	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V
Codabar with check sum	24751	28.8	1	6	18	N/V	N/V	6	18	N/V	N/V
MSI	24760	28.8	1	6	12	18	24	6	12	18	24
MSI with check sum Mod 10	24761	28.8	1	6	12	18	24	6	12	18	24
MSI with 2 check sums Mod 10	24762	28.8	1	6	12	18	24	6	12	18	24
MSI with 2 check sums Mod11 and Mod 10	24763	28.8	1	6	12	18	24	6	12	18	24
ZIP+4 POSTNET 5	24770	9 (fix)	1 (fix)	12 (fix)	N/V	N/V	N/V	22	N/V	N/V	N/V
ZIP+4 POSTNET 9	24771	9 (fix)	1 (fix)	12 (fix)	N/V	N/V	N/V	22	N/V	N/V	N/V
ZIP+4 POSTNET 11	24772	9 (fix)	1 (fix)	12 (fix)	N/V	N/V	N/V	22	N/V	N/V	N/V
Singapore 4 State Postal Code	24780	14.5 (fix)	1	11 (fix)	N/V	N/V	N/V	16 (fix)	N/V	N/V	N/V
Australia 4 State 37-CUST	24785	14.5 (fix)	1	11 (fix)	N/V	N/V	N/V	16 (fix)	N/V	N/V	N/V
Australia 4 State 52-FF-MET	24786	14.5 (fix)	1	11 (fix)	N/V	N/V	N/V	16 (fix)	N/V	N/V	N/V
Australia 4 State 67-FF-MET	24787	14.5 (fix)	1	11 (fix)	N/V	N/V	N/V	16 (fix)	N/V	N/V	N/V
UPS Maxicode	24800	N/V	1	N/V	N/V	N/V	N/V	N/V	N/V	N/V	N/V
DataMatrix	24820	N/V	1	0	0	0	0	3	2	6	0
Aztek	24830	1	0	10	N/V	N/V	N/V	0	N/V	N/V	N/V
PDF 417	24850	1	0	10	N/V	N/V	N/V	0	N/V	N/V	N/V
QR Code Model 1	24860	N/V	0	10	N/V	N/V	N/V	N/V	N/V	N/V	N/V
QR Code Model 2	24860	1	0	20	N/V	N/V	N/V	N/V	N/V	N/V	N/V
OMR	24899	1	0	6	12	18	24	6	12	18	24

## A1.4 List of values for the T parameter

« T » Parameter	Barcode Type (Symbologie)	Number of bars/spaces
24600	UPC-A	4
24601	UPC-A+2	4
24602	UPC-A+5	4
24610	UPC-E	4
24611	UPC-E+2	4
24612	UPC-E+5	4
24620	EAN/JAN-8	4
24621	EAN/JAN-8+2	4
24622	EAN/JAN-8+5	4
24630	EAN/JAN-13	4
24631	EAN/JAN-13+2	4
24632	EAN/JAN-13+5	4
24640	2/5 interleaved	2
24641	2/5 interleaved with check sum	2
24650	2/5 industrial	2
24651	2/5 industrial with check sum	2
24642	Deutsche Post 2/5 Sort code 13	2
24643	Deutsche Post 2/5 Identcode 11	2
24660	2/5 matrix	2
24661	2/5 matrix with check sum	2
24670	Code 39	2
24671	Code 39 with check sum	2
24672	Code 39 plus space before and after the date	2
24673		2
24680	Code 39 extended	2
24681	Code 39 extended with check sum	2
24675	Danish Post 39	2
24676	French Post 39 A/R	2
24700	Code 128 autoswitch	4
24701	Code 128 A	4
24702	Code 128 B	4
24703	Code 128 C	4
24704	Code 128 C	4
24710	UCC-128	4

« T » Parameter	Barcode Type (Symbologie)	Number of bars/spaces
24720	EAN 128	4
24770	ZIP+4 POSTNET 5	1 (cannot be changed)
24771	ZIP+4 POSTNET 9	1 (cannot be changed)
24772	ZIP+4 POSTNET 11	1 (cannot be changed)
23591	USPS ZEBRA	1 (cannot be changed)
24644	USPS Tray Label	1 (cannot be changed)
24645	USPS Sack Label	1 (cannot be changed)
24690	Code 93	4
24691	Code 93 extended	4
24750	Codabar	2
24751	Codabar with check sum	2
24785	Australia 4 State 37-CUST	1 (cannot be changed)
24786	Australia 4 State 52-FF-MET	1 (cannot be changed)
24787	Australia 4 State 67-FF-MET	1 (cannot be changed)
24788	Australia 4 State FCC-45 REPLY	1 (cannot be changed)
24760	MSI	2
24761	MSI with check sum Mod 10	2
24762	MSI with 2 check sums Mod 10	2
24763	MSI with 2 check sums Mod11 and Mod 10	2
24780	Singapore 4 State Postal Code	1 (cannot be changed)
24785	Australia 4 State 37-CUST	1 (cannot be changed)
24786	Australia 4 State 52-FF-MET	1 (cannot be changed)
24787	Australia 4 State 67-FF-MET	1 (cannot be changed)
24788	Australia 4 State FCC-45 REPLY	1 (cannot be changed)
24790	Royal Mail 4 State Customer Code	1 (cannot be changed)
24800	UPS Maxicode	2D Barcode
24820	DataMatrix	2D Barcode
24830	Aztek	2D Barcode
24840	Codablock F	4
24850	PDF 417	2D Barcode
24860	QR Code Model 1	2D Barcode
24860	QR Code Model 2	2D Barcode
24899	OMR	1

**Examples:**

**EAN/JAN 13** width default values:

Esc(s74v24630T123456789012Esc(s10h12v0p3T



**Code 39** without check sum with HRT half-embedded OCR-B:

Esc(s57v3p105h6,19s6,19b24670T123456Esc(s10h12v0p3T



**Codabar** with check sum HRT default under the barcode with printed check sum as HRT:

Esc(s28v104p24751TA123456AEsc(s10h12v0p3T



## A2 Important information about creating PCL barcode commands

All parameters have to be set in one command line. The command must be terminated by “T”. After the barcode command and encoding date, a usual font command must follow.

**Example of a proper PCL barcode command:**

```
Esc(s2p10,20b10,20s24670TEsc(s0T
```

**Examples of an improper PCL barcode command:**

```
Esc(s24670t2p10,20b10,20S
```

```
Esc(s10,20B Esc(s10,20S Esc(s24670T
```

*Info:* In addition to the classic Escape characters (27 dez, 0x1B), BENS supports the “~” (Tilde) character as an alternative.

The following barcode command is valid for **BENS**:

```
~(s2p10,20b10,20s24670T~(s0T
```

This behaviour makes it easier to print barcodes from applications which do not support inserting binary data via a keyboard.

## A2.1 Embedding PCL barcode commands into applications

In the “Examples“ folder of the CD delivered with **BENS**, you will find an MS Excel and MS word file **BENS** with embedded barcode commands.

Additionally, you will find a description of how to embed barcode commands into applications below.

Also in the “Examples“ folder, you will find a DOS file "dosfile.prn" which prints barcodes. This file can be opened with any editor, but please note that binary characters are also included, which cannot be viewed by many editors. If you want to change this file, we recommend the use of an ASCII-Hex Editor, which supports the editing of binary data.

A very important point is to take care that the PCL command comes to **BENS** as one. Printer drivers very often insert printer commands into strings to format them. In this case, the command will be divided into different parts, which will not be recognised by **BENS**. For example, it can happen that the string

“Universal Barcode“

in the printing data stream looks like the following:

”U□\*p512Xniv□\*p639Xer□\*p728Xsal Bar□\*p1040Xcode“

The barcode command

~(s10,20b10,20s24670T12345~(s0T

could then look like this:

~□\*p498X(□\*p531Xs10,20b□\*p888X10,□\*p1027X20s□\*p1188X246  
□\*p1355X7□\*p1410X0T□\*p1527X123~s0T

and cannot be recognised by **BENS** as a barcode command.

This problem is an issue of Windows in particular.

**Note:** *To test if the printer driver used passes the barcode command as one string, print one file and check it with an editor like notepad.*

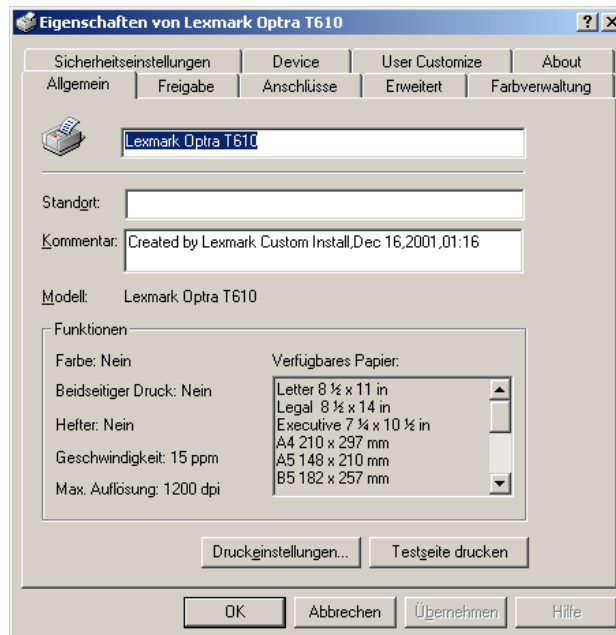
If the result is negative, you can test another printer driver. Very often, the printer driver delivered by the printer manufacturer works better than the driver integrated in Windows, but a lot of PCL printer drivers from Windows XP produce results which suit the needs of **BENS**.

- In some cases, the following handling may be a solution (e.g. on the Lexmark printer driver).

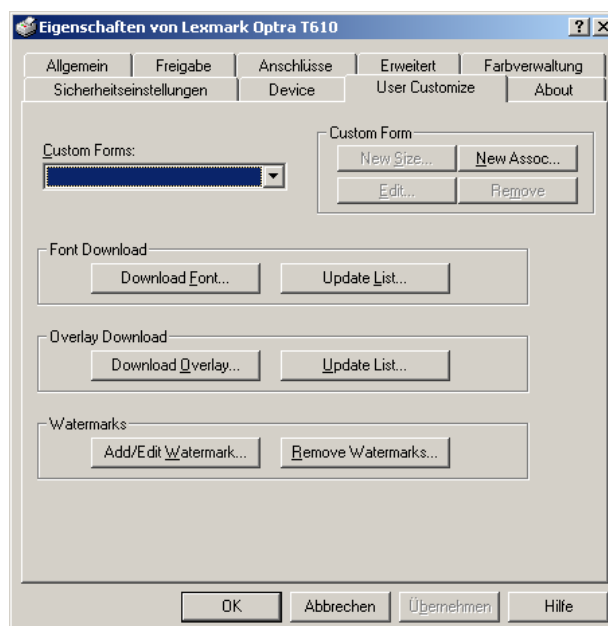
**Attention!:** ***BENS** will recognise the barcode command properly only if after encoding data it is followed immediately by another PCL command font. Insert “~(s0” (without quotes) or any other PCL command for font setting.*

## A2.2 Example of the installation of the printer font for Lexmark Optra T610.

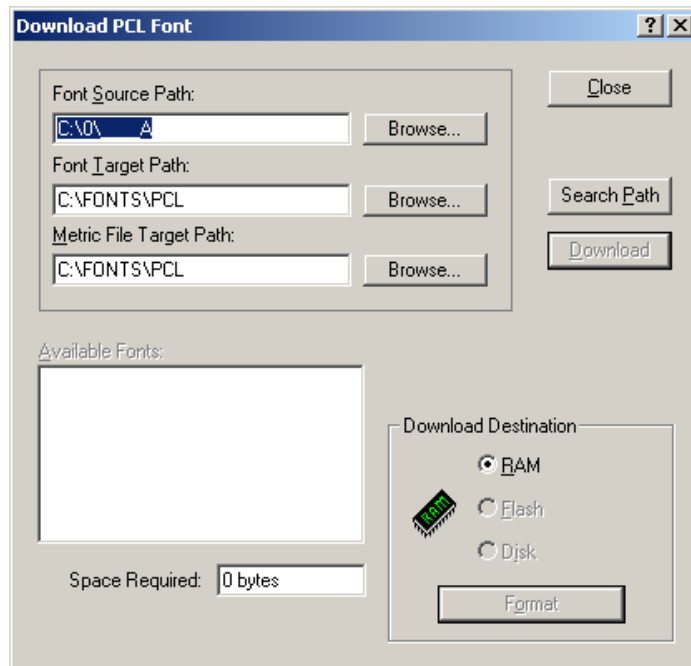
- On the Windows desktop, select **Start/settings/printer and faxes**.
- Select the printer, click on the right mouse button and choose **Properties..**
- The following dialog will appear:



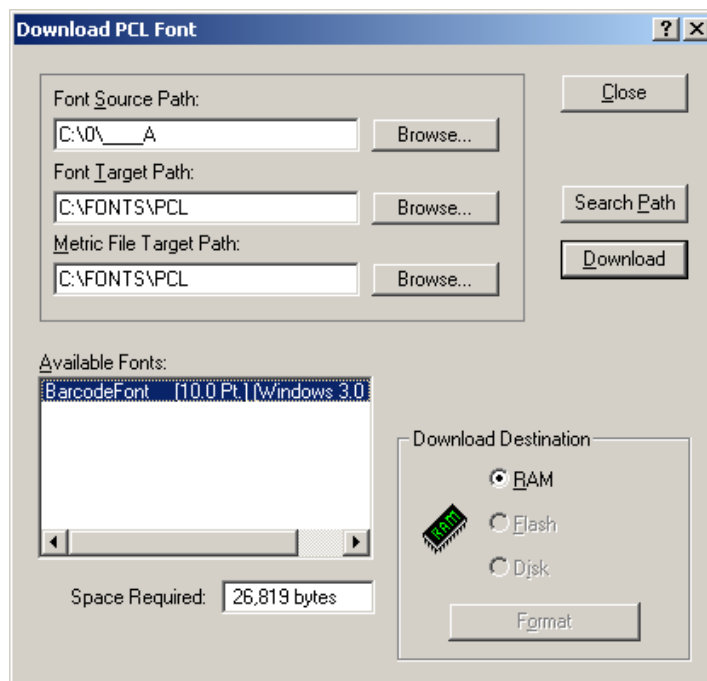
- Click on the tab **User Customise**.
- The following dialog will appear:



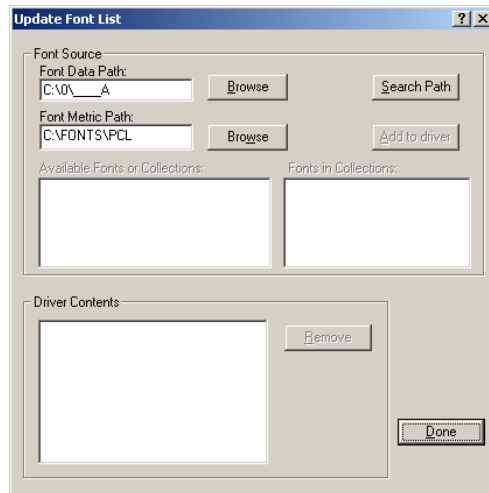
- Click on the **Download Font...** button
- The following dialog will appear:



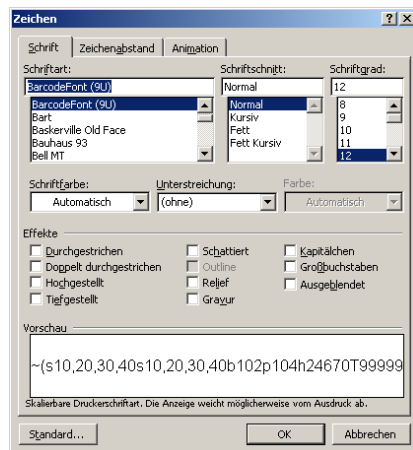
- Click on **Browse** next to the **Font Source Path** field to find the folder containing the font.
- Click on the **Search Path** button.
- The font will appear in the **New Soft Fonts** field.



- Click on the **Close** button to go back to the main dialog.
- Now click on the **Update List** button.
- The following dialog will appear:



- Click on the **Search Path** button. The font will be found.
- Select the font and click on the **Add to driver** button.
- Click on the **Done** button to finish the action.
- Close the printer driver program.
- Now set the “Lexmark Optra T610” printer for the document of application (e.g. MS-Word®). If you start the function for font selection, the “BarcodeFont” will appear in the list (only if the current printer is “Lexmark Optra T610” in this case). Format the whole command with that font , encoding data and end command using the “normal”, “12 Pt.” BarcodeFont).

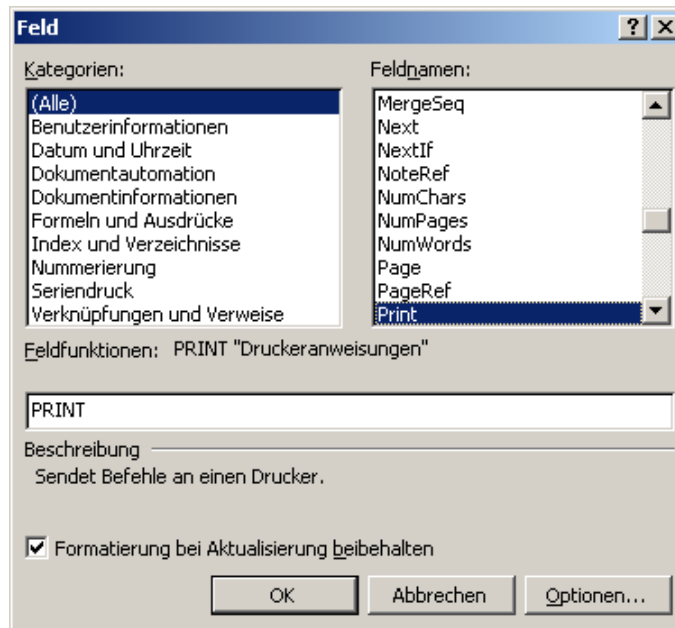


- If the document is to be printed now, the barcode command will be passed on as one string and can be recognised by **BENS**.

### A2.3 Special features of MS-Word®

MS-Word® makes it possible to insert barcode commands in another way. MS-Word® supports inserting of printer commands.

- Select from MS-Word® Menu Insert/Field.



- Find the **Print** field, select it and click on **OK**.

**Attention!** The view “field codes” (Tools / Options / View / field codes) must be checked (or press Alt+F9) to see field codes in the document.

- Now insert the barcode command, e.g.:

```
{PRINT \* MERGEFORMAT ~(s10,20,30,40s10,20,30,40b
102p 104h24670T99999999999999997~(s0T)}
```

**Attention!** Mail merge fields can also be inserted in such a field.:

```
{PRINT \* MERGEFORMAT
~(s10,20,30,40s10,20,30,40b102p104h24670T
{MERGEFIELD Serial_number}~(s0T)}
```

## A2.4 Printing barcodes from a SAP SYSTEM

SAP SYSTEM drivers do not insert any printer commands into strings, so the problem described in A2.3 does not exist. For this reason, you do not need to work with the binary escape and can work with the alternative character “~” and insert the barcode command directly into SAPscript or Smart Forms.

The better way is to work with PrintControls. They can be inserted into the used device type using the transaction SPAD. It usually takes place in the ASCII Hex notation.

For this reason, the PCL barcode command looks like the following

```
~(s10,20,30,40s10,20,30,40b102p104h24670T
```

and has to be converted into an ASCII Hex format:

```
7e287331302c32302c33302c34307331302c32302c33302c3430623  
130327031303468323436373054
```

**Attention!:** Please remember that in a SAP SYSTEM, the barcode command consists of two parts, between which the encoding data will be written. The second part is the barcode command termination and should be a “normal” font command such as Esc(OT.

**Attention!:** A SAP SYSTEM supports this method of printing barcodes by default and provides plenty of barcode commands as PrintControls for different PCL types of devices. Print the standard text, called “SAPscript\_barcodetest”(available on your SAP System) to check if the barcode you need already exists.

From a SAP Systems point of view, **BENS** shall be treated as a printer with either a socket port or a SMB port or a LPR port. There are different ways of defining the printer connection for **BENS** in a SAP System. Read more about SAP connection types in the **BENS and SAP Connections** document which is located on the BENS CD.

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