Jetmobile®

information traceability, security and mobility

BarDIMM™

version 5

Patents pending

Installation and Configuration Guide

Seventh Edition

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Rev. 01/10

Table of Contents

Table of Contents

Chapter 1 - Introduction

Barcode technology provides an easy, inexpensive and highly accurate means of data entry and storage for computerized information management systems.

Item identification information (e.g. inventory control, work-in-process tracking, distribution tracking, and other materiel management) is the most common type of data stored in bar code systems.

The BarDIMM Pro products are intelligent modules providing the sophisticated BarDIMM language to a range of printers. They offer barcode printing and font, macro, logo, and storage capabilities. The BarDIMM Box can be attached to any network or USB printer with PCL5 language compatibility. BarDIMM Pro modules can be used with most HP LaserJet and HP Business InkJet printers. Printing professional barcodes has never been as easy and fast as with BarDIMM Pro and BarDIMM Box!

The full list of supported printers having the minimum printer firmware requirements is available on http://www.jetmobile.com

The BarDIMM Language supports complex high-density two-dimensional barcodes like PDF417 and UPS MaxiCode, Data Matrix, QRCode, Aztec and Codablock. Two dimensions mean the reading is performed both horizontally and vertically as information is encoded in both directions. These barcodes are then designated as *2D Barcodes*, and non-2D barcodes are called *1D Barcodes*. Some 2D barcodes can encode up to dozens of kilobytes of data, with features like data compression, macro-barcodes, encryption and error correction algorithms.

BarDIMM Pro also includes the standard HP Barcode & More fonts. As a result, OCR-A and OCR-B characters are available and there is then backward compatibility with older applications as well as HP Barcode & More printer drivers.

A complete set of fully scalable symbols is included:

- The EURO symbol € (the European currency symbol)
- Safety symbols, electronic and manufacturing symbols to include in labels printing

BarDIMM Pro and BarDIMM Box also feature the Freescape system. With Freescape, the Escape code can have a synonym, a user-defined Escape Code or Alternate Escape Code (AEC). This character acts exactly like the standard Escape Code when found at the beginning of a regular PCL sequence, and it can be a printable character. This functionality does allow all kinds of systems to use PCL and BarDIMM Pro, even if they cannot send binary data to a printer.

1.1. BarDIMM Pro and BarDIMMBox Presentation

BarDIMM Pro and BarDIMM Box are intelligent technology solutions adding the sophisticated BarDIMM language and advanced capabilities to PCL5 printers. This language provides

BARCODE printing capabilities. The only barcode fonts that BarDIMM Pro includes are the fonts of the now discontinued Barcode & More font cartridge, which have been included under license for backward compatibility purpose, the scalable logos and the scalable OCR-B (ASCII set) as stand-alone font and font-for-barcode-text. BarDIMM Pro and BarDIMM Box also feature the unique Freescape capability to print PCL commands from non binary systems.

BarDIMM Pro and BarDIMM Box currently support more than 65 bar code formats (symbologies) from the most passive to the most complex system (2D, interleaved, triple checksum, etc.).

Each of these formats can be declined in any height from 1/254 inch to 13 inches (1mm to 33 cm) with 1/72 inch increment, bar widths can be defined in 1/600 inch units, code value can be printed as text together with code in many different embeddings with 20 different scalable fonts. As a result, you can generate a million different kinds of bar code formats from BarDIMM Pro and BarDIMM Box.

BarDIMM Pro and BarDIM Box are not made of fonts but has their own language to describe the barcodes with one number for each type. Numbers from 24580 to 24900 activate the BarDIMM Pro or BarDIMM Box intelligence. All data following the BarDIMM language command is analyzed and converted directly into bar code by the firmware.

Note: In this manual, the escape code is indicated as <Esc>. These five characters must not be entered as individual symbols, but must be replaced with the unique character of ASCII value 27.

Important note: The BarDIMM language is invented and developed by Jetmobile, it benefits from a legal deposit, it is not owned by HP, it's not part of PCL5 and its language is copyrighted. This means it cannot be reproduced or interpreted without a proper license agreement.

Chapter 2 - Bar Code Readability

The special issue discussed in this section may pertain to all the bar codes or, in some cases, to a specific bar code generated by the BarDIMM Pro and BarDIMM Box products.

2.1. When Printing With a New Ink Cartridge

On some laser or inkjet printers, a slight degradation of image quality may occur immediately after replacing the ink cartridge. To assure that the bar code images are printed with sufficient quality for later reading with electronic devices, follow these instructions:

1. Ensure that the storage and care instruction that are supported with the ink cartridge were followed before installing the new ink cartridge in your printer.
2. Be sure to change the ink cartridge when necessary. Carefully follow the installation instructions (especially those relating to proper agitation of the cartridge) before you install the ink cartridge.

2.2. Print Density Settings

When printing bar codes, it is recommended that you start at the mid-range of the printer density dial or front panel value (3). Run several bar code samples and check them for readability. Then, if necessary, adjust the printer's density setting accordingly.

The color and type of paper that you are using can also affect the readability of printed bar codes. You should closely monitor this type of printing.

The fonts and bar code algorithms available in the BarDIMM product have been found to be highly readable.

HOWEVER:

JETMOBILE DOES NOT WARRANT AND HAS NOT TESTED THAT THE BAR CODES, OCR-A AND OCR-B CONTAINED OR GENERATED BY BARDIMM PRO and BARDIMM BOX ARE READABLE BY ALL READING DEVICES.

JETMOBILE RECOMMENDS THAT YOU TEST THE READ/WRITE COMPATIBILITY OF THESE BARCODES AND FONTS BEFORE IMPLEMENTING APPLICATIONS.

Chapter 3 - Installing BarDIMM Pro & BarDIMM Box

3.1. Installing BarDIMM Pro

This section is only applicable to BarDIMM Pro on memory boards. For the BarDIMM Box, please refer to the next section.

3.1.1. BarDIMM Pro Memory Board for HP Printers

CAUTION:
When removing a board from the antistatic bag, do not touch the metal traces on the board.

Please verify that the BarDIMM Pro you are installing is compatible with your printer model and that your HP LaserJet / Business Ink Jet has at least two internal CompactFlash™ or USB slots. The BarDIMM Pro board can be installed in any of these slots. Because the slots are close together, we recommend installing them from right to left or bottom to top (depending on the printer), starting with the slot 1.

WARNING:
Hazardous voltages are present in the printer. Never remove any access cover or work near exposed electrical parts while power is connected.

Open the printer formatter like to install extra memory (please refer to your printer manual as procedure differs between printer models.

3.1.1.1. Installing the BarDIMM Pro USB Board (USB-Based Printers)

HP Printers supporting solutions stored on USB include the following models:

- LJ P3005, LJ M3035mfp, CLJ 3000, CLJ 3800,
- LJ M4345mfp, LJ M5035mfp, CP3505, P4014/0415/4515, CP6015 CM6040mfp and all supported printers introduced after may 1st, 2008.

1. Locate the USB slot on the formatter and insert the BarDIMM Pro USB card fully but carefully.

3.1.1.2. Installing the BarDIMM Pro CompactFlash Board (CF-Based Printers)

HP Printers supporting the CF include the following:

- LJ2410/20/30, LJ 4240, LJ 4250, LJ 4350, LJ 4345mfp, CLJ4650, CLJ 4700, CLJ 4730mfp, LJ 5200, CLJ 5550, LJ 9050, LJ 9040mfp, LJ 9050mfp, and CLJ 9500mfp.

1. Locate the CompactFlash slot on the formatter and insert the BarDIMM Pro CF card carefully.

3.2. Installing the BarDIMM Box

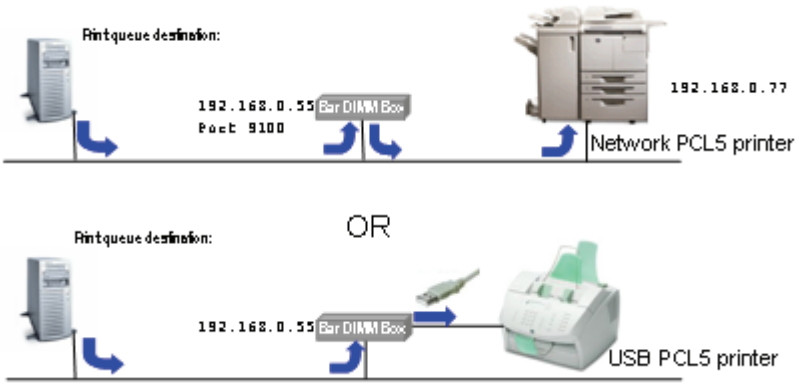
This section is only applicable to the BarDIMM Box.

Printers for which a BarSIMM, BarDIMM, or BarDIMM Pro memory module is not available can be connected to the BarDIMM Box. The BarDIMM Box acts as a print job converter and router.

To print documents that make use of BarDIMM functionalities, a computer needs to send the PCL5 print flow to the BarDIMM Box as if it were a standard network printer, on port 9100. The BarDIMM Box processes the data, adds the required barcodes, or OMR marks, then reroutes the modified flow to the destination printer or to a USB printer directly attached to the BarDIMM box. The rerouting to another IP address or to the built-in USB port is configured on the BarDIMM Box web page. BarDIMM Box supports 10/100BT Ethernet networks.

Note: It is advisable to create two print queues—one to the BarDIMM Box, which should be used for all barcode documents, one to the printer, which should be used for non-barcode documents.

The example below shows the BarDIMM box configured with an IP address of 192.168.0.55.



3.2.1. The BarDIMM Box

Front view

Back view

Note: The CompactFlash card should never be removed and the USB slots on the front should not be used either.

3.2.2. Connecting the BarDIMM Box

1. Connect the BarDIMM Box to the network using an appropriate RJ45 cable.
2. Connect the BarDIMM Box to your USB printer if applicable.
3. Connect the power supply to the BarDIMM Box and to the main power.
4. There are 2 LEDs on the front of the box.
   - The top LED is on when the box is powered.
   - The bottom LED is on when the box is processing data.
5. Check that the top LED is on. If it is not on, check the power supply.

6. Wait 2 minutes for a complete BarDIMM box boot.
7. You can optionally connect a screen and keyboard to the back of the BarDIMM Box in order to interface directly with the box without having to connect to its IP address. This can be useful if the IP address is unknown.

3.2.2.1. Retrieving the IP Address of the BarDIMM Box

BarDIMM Box works in DHCP and in fixed IP address modes, which can be set from the BarDIMM box embedded web server. DHCP is used by default. The first step is then to determine the IP address provided by DHCP:

- The MAC address of the BarDIMM Box is indicated on the small label under the box. It can be used to retrieve the IP address from the list of connected devices on your DHCP server administration tools.
- Otherwise, the JetSpool v4.1 tool can discover the BarDIMM Box installed on the network. JetSpool is available from the Jetmobile web site at: http://www.jetmobile.com. The **DOWNLOAD-DRIVERS** area can be reached from the top **INFORMATION** menu.

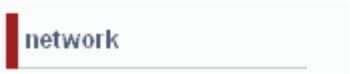
3.2.2.2. Connecting to the Web Page of the BarDIMM Box

- Open a web browser, and enter the IP address of the BarDIMM Box.
- The BarDIMM Box web page should appear. If not, please verify the IP address.

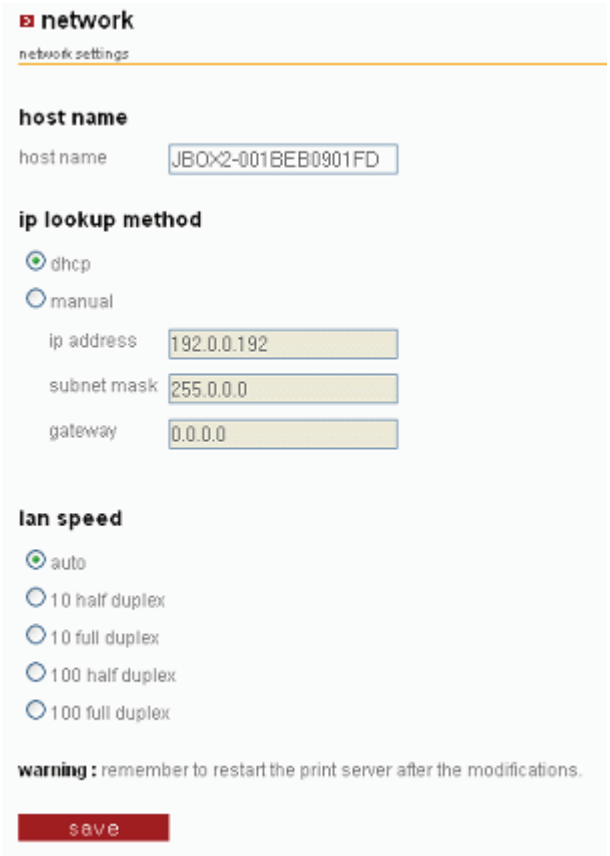
The main login page shows up with the user/password fields:

- The user name to use is always **admin** and cannot be changed.
- The password is not set. You must enter the password you wish to use. It will be the set password until a **RESTORE FACTORY DEFAULT** is performed.

3.2.2.3. Options in the Web Server of the BarDIMM Box



This option allows the configuration of the network parameters, the DHCP, and the fixed IP:



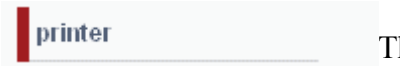
Parameter	Definition
HOST NAME	Host name for the BarDIMM Box. Please change it to the name of the printer it is attached to (e.g. **`BDBox_LJ1300_Sales`**).
IP LOOKUP METHOD DHCP	Keep **`DHCP`** to let your network DHCP server automatically assign an IP address to the BarDIMM Box. Select **`Manual`** to manually assign all network parameters.
LAN SPEED	Keep **`Auto`** or force the LAN setting if necessary.
SAVE	Click on **SAVE** to keep the new settings.

Important note: The BarDIMM Box must be rebooted to use the new settings. This is done by clicking on the 

button in the home page.

Do not forget to update your browser address as the IP address of the box will be changed as per your wish.

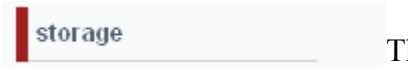
You can also change the IP address by attaching a screen and keyboard to the back of the BarDIMM Box and entering **Alt+F2** and then the new IP address.



This screen allows you to define where the target printer is: connected to the built-in USB port (lan2USB), or attached to the network (lan2lan). In the latter case, both the IP address and the port must be indicated.

Parameter	Definition
SOFTWARE LOG	This option activates the generation of a log file to assist troubleshooting. The log file is automatically erased and restarted once its size reaches 40 KB.
SAVE	Click on **SAVE** to keep the new settings.

Important note: The BarDIMM Box must be rebooted to use the new settings. This is done by clicking on the **RESTART** button on the home page.



This screen allows you to load various files in the BarDIMM Box:

- PCL5 forms, macros, and printer font PJL files
- BarDIMM Box software upgrades (requires a current maintenance contract)

For more information about forms, macros, and font PJL files please refer to the *Loading Fonts and Macros* section at the end of this manual, or contact your Jetmobile authorized VAR.

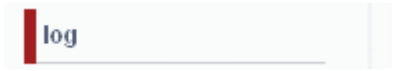
This screen allows you to load firmware updates for the box operating system. This must not be used to load BarDIMM software updates. Uploading an operating system firmware upgrade also removes all software from the BarDIMM Box, including

the BarDIMM software which will then need to be reloaded using the **STORAGE** screen. The box will automatically reboot.

There are two methods for upgrading the firmware of the BarDIMM Box:

- Via the firmware screen of the BarDIMM Box as mentioned above. In this case the firmware upgrade is provided in the form of an image file.
- Via Jetspool in which case an RFU is provided.

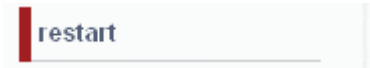
Note: The BarDIMM Box should not be used to process print jobs during the upgrade process.



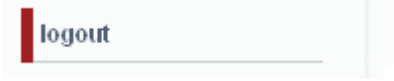
This screen allows you to visualize and save the log file detailing the internal activity of the BarDIMM Box. You may use it to verify network activities and configuration. Access to this information/file might also be requested, should you need technical assistance for the BarDIMM Box.

This screen allows the resetting of the BarDIMM Box back to factory settings, the way it was when you received it. The password will be reset and will need to be redefined at the first login, the configuration is then deleted.

You can also restore the factory settings by attaching a screen and keyboard to the back of the BarDIMM Box and entering **Alt+F3**.



This screen restarts the BarDIMM Box. The reboot rakes approximately 2 minutes.



This option closes the web session with the BarDIMM Box.

Chapter 4 - Testing BarDIMM Pro and BarDIMM Box

4.1. Testing BarDIMM Pro for HP Printers

This section is only applicable to the BarDIMM Pro product

For the BarDIMM Box, please refer to the next section.

There are two different features built in the BarDIMM Pro: fonts and firmware (the BarDIMM language). They work totally independently, so you may have to test both.

- Fonts: BarDIMM Pro contains the Barcode & More fonts. From the front panel of the printer (if the printer has one), generate a PCL Font List. If OCR-B or [23590] font names appear in the font list, the BarDIMM Pro fonts are recognized by the printer. This indicates the hardware is recognized by the printer, but it does not mean the firmware is recognized.
- Firmware: The following two operations must be performed:
  - From the front panel of the printer, generate a Printer Auto Test. A page is printed, on which the list of *Personalities* appears. The BarDIMM Pro application should be listed on the left side of the page
  - BarDIMM Pro test files are available on the driver section of the Jetmobile web site http://www.jetmobile.com. Send them to the printer to verify whether the BarDIMM Pro is active. If the barcodes are replaced by text, the BarDIMM is not recognized and the printer can run out of memory trying to map barcode parameters to the default text font.

If both tests are successful, BarDIMM Pro is recognized by the HP LaserJet / Business Ink Jet and operates correctly.

If those two tests fail, verify if the BarDIMM Pro you have purchased is compatible with your printer (a label on the board should indicate the compatibility). Please then contact your distributor (please read below).

There is one version of BarDIMM Pro for every HP LaserJet / Business Ink Jet printer model, and the BarDIMM Pro board is not cross-printers compatible. Make sure you have specified the model with your BarDIMM Pro order. LaserJet / Business Ink Jet models are not compatibles together, i.e., BarDIMM Pro for LJ P4015 cannot work in a LJ CP3505.

ON PRINTERS WITH HARD DISK, MAKE SURE YOU REMOVE BARDIMM FROM THE PRINTER IF YOU NEED TO REFORMAT THE PRINTER DISK. IF YOU KEEP BARDIMM PRO IN THE PRINTER, IT WILL BE ERASED.

4.2. Testing the BarDIMM Box

This section is only applicable to BarDIMM Box.

- You can test the BarDIMM box by sending to it a BarDIMM Pro test file. This can easily be done using the JetSpool utility. BarDIMM Pro test files and JetSpool utility are available on the Download-drivers section of the Jetmobile web site http://www.jetmobile.com.
- You can manually send a BarDIMM Pro test file to a BarDIMM box using the following command line:
  `lpr -S <IP Address> -P raw <filename>`
  where **`<IP Address>`** is the IP address of the BarDIMM Box
  `<filename>` is the name of the test file to send

If text replaces the barcodes, the BarDIMM Box is not working properly. Please contact your BarDIM Box reseller and provide the Log file information to facilitate troubleshooting.

Chapter 5 - How BarDIMM Pro and BarDIMM Box Work

1. A Barcode number in the BarDIMM language range (24580-24900) is activated with a BarDIMM language sequence: <Esc>(s#p#h#v#b#s#T where # are parameters.
2. The end of bar code data is determined according to the bar code type:
   - Bar code data is numeric only: ended by space/CR/LF/FF/Escape code.
   - Bar code data is alphanumeric: ended by CR/LF/FF/Escape code.

Advice: end the data to barcode with a valid PCL5 regular font sequence, such as <Esc>(10U<Esc>(s0p12hbs4099T

Transparent Print Data Mode

Some bar code formats support full 128 character set, from ASCII code 0 to ASCII code 127, or full binary data (ASCII 0 to 255): Bar codes Extended 39, Extended 93, 128A, PDF417, 128auto, MaxiCode, EAN/UCC128, Data Matrix, Aztec, Codablock, QRcode.

If you want to print special characters (ASCII code < 32) with these bar codes, a *Transparent Print Data* PCL sequence (<Esc>&p#X, where <Esc> is replaced by ASCII char 27 decimal or by '~' and where # is replaced with the number of data bytes that follow until the next escape sequence) must follow immediately the font selection sequence. This is the only way to know how many characters have to be printed as bar codes. Please analyze the sample Code/EAN/UCC 128 test files for more information.

3. Data is analyzed to verify it fits in the bar code specs:
   - Correct data size (25 must have an even size, EAN 8/13 and UPC have fixed lengths, etc.).
   - Valid data: some systems, like UPC-E, accept only specially structured data.
   - Data only Numeric or Alphanumeric, allowed characters.

If data is invalid (incorrect size or invalid characters), an X is printed on bars and an error message describing the problem is systematically added below the bars, preventing the user from blindly printing invalid bar codes.

4. Some formats require what is called a checksum. A checksum is a value, result of a complex calculation on the code data. This value is added to the end of the data and used by the code reader to proof the reading. BarDIMM Pro and BarDIMM Box calculate automatically the checksum(s) of bar codes that need it. Bar codes can have up to two checksums (MSI Plessey, UCC128). If the checksum was provided with fixed length data (EAN 8/13, UPC) it is ignored.

5. The bar code is generated according to parameters in the BarDIMM Pro Language command. The T parameter selects the Barcode type.

As BarDIMM Pro and BarDIMM Box are algorithm-only, the user can apply the scaling independently in the X and Y axis for the 1D barcodes. In the past, with standard scalable fonts, bigger size meant larger bars, resulting in an unreadable code that was too wide, and small size meant thinner bars, also resulting in unreadable codes. Some barcodes are standardized and cannot be resized. Some 2D barcodes can be resized by columns/rows or by defining a ratio.

The bar code can be of any height, in the 3 to 960 point size range (1 point size = 1/72 inch).
The current cursor position is the location of the bottom left corner of the leftmost black bar, whatever bar code text parameter is provided.

Every bar code system has default options, activated when parameters are not provided. The user does not need to provide all parameters. As an example, if the height is omitted, the default size is used. Every code has its specific default values, based on international standards.

6. If required, BarDIMM Pro and BarDIMM Box prints the code value as centered text with the bars, either under, half-embedded in, full embedded in, or above the bars. Checksum and flag characters are automatically placed in the right place for some systems (EAN 8/13 and UPC), according to the international standards. Automatic sizing limits the embedded text point size to 15 (no limit for text above or under bar code).
7. After bar code printing completion, cursor is set after the bottom right corner of the rightmost black bar.
8. If another bar code then needs to be printed, just locate the cursor to a new position and send the barcode data. The BarDIMM language command does not need to be sent again unless the barcode format changes.

Important note for BarDIMM Pro

Should you need to upgrade your printer firmware:

1. Uninstall BarDIMM Pro (switch off and unplug all cables from your printer/MFP, remove the BarDIMM Pro CompactFlash or USB, then plug back all cables and switch on the printer).
2. Perform the firmware upgrade and verify the success through the configuration page.
3. Reinstall the BarDIMM Pro module inside the printer.

Not following this procedure may lock your printer and require direct HP support.

5.1. How to Use BarDIMM Pro and BarDIMM Box

Barcodes are activated using a font-like escape sequence, generated:

- from specific developments, where developers write code that generate PCL code with BarDIMM language extensions,
- from standard ERP software such as SAP R/3, Oracle, Peoplesoft, BAAN. Please read the *Supported Operating Systems and Software* chapter in this manual for more information. OSS notes are available from the www.jetmobile.com web site.
- from MS Windows. Please read the *MS-Windows Support* section later in this manual.

Please make sure you read the *Usage & Format* section at the end of this manual carefully to fully understand the particularities of the barcode you need to generate.

Chapter 6 - The Freescape Feature

PCL codes always begin with the non-printable Escape code (Hexa: 1B, Dec: 27). Some systems cannot use or send binary data to a device. Binary means any character other than a letter, punctuation or a digit. Such systems include Mainframes where printers are connected to terminals, and AS/400. This can be a problem to use the HP PCL language, and to use Barcodes. With the FREESCAPE feature, the Escape code has a synonym, a user-defined Escape Code or Alternate Escape Code (AEC). This character acts exactly like the standard Escape Code when found at the beginning of a regular PCL sequence. Default value for the AEC is the TILDE '~'. Freescape is smart enough to ignore the EAC if it is found as pure data. You can mix regular Escape Codes and Alternate Escape Codes. The AEC can be one of 10 characters.

Note: The Freescape Escape sequence setting is only valid for the current job.

There is a BarDIMM Pro and BarDIMM Box language sequence to change the Alternate Escape code:

```
<Esc or AEC>**#J
```

Where # is the ASCII decimal value of the new AEC: 34 ("), 35 (#), 36 ($), 47 (/), 92 (\), 63 (?), 123 ({), 125 (}), 124 (|), 126 (~) and 27. Indicating 27 disables Freescape.

6.1. Setting the Freescape Settings

With BarDIMM Box, the box embedded web page allows to configure the settings.

With BarDIMM Pro the Freescape feature can be activated/disabled/ configured for all jobs on the front panel of the printer.

Browse through the menu options until 

appears.

6.1.1. Activating/Deactivating Freescape

1. Press the **Item ->** key until **FREESCAPE=ON** or **FREESCAPE=OFF** appears.
2. Press the **Value +** key to toggle between **ON** and **OFF**.
3. Press the **Select** key to validate the choice.

When Freescape is deactivated, only the regular Escape code (Hexa: 1B, Dec: 27) can be used to start PCL commands.

To change the Freescape AEC character (should be performed at installation time):

1. Press the **Item ->** key until **AEC CHAR=** appears.
2. Press the **Value +** and **-** key to toggle between possible AEC. By default, pick TILDE.
3. Press the **Select** key to validate the choice.

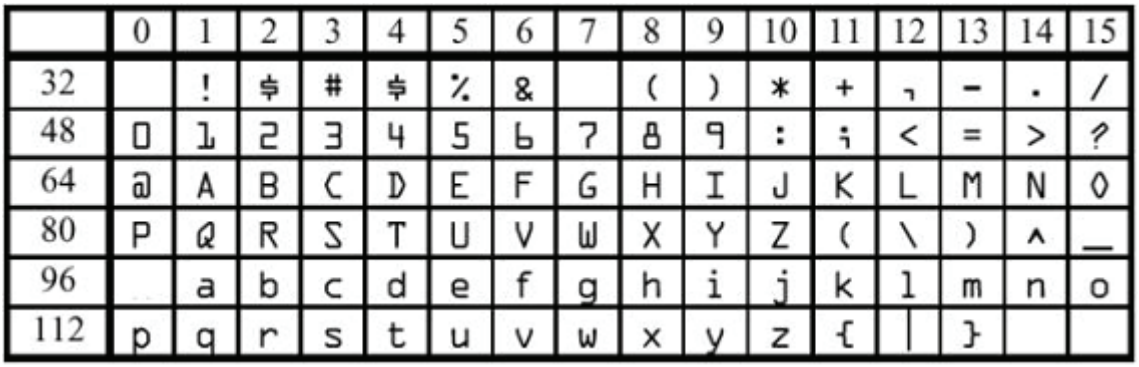
Note: The choice will be valid for the next incoming print job.

Chapter 7 - OCR-A and OCR-B fonts

This chapter is specific to BarDIMM Pro. OCR-A and OCR-B fonts are not available with the BarDIMM Box.

PCL Escape sequences to call those fixed-size fonts:

- OCR-A: <Esc>(0O<Esc>(sp10h12vsb104T
- OCR-B: <Esc>(1O<Esc>(sp10h12vsb110T



	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
32		!	$	#	$	%	&		(	)	*	+	,	-	.	/
48	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
64	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
80	P	Q	R	S	T	U	V	W	X	Y	Z	(	\	)	^	_
96		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
112	p	q	r	s	t	u	v	w	x	y	z	{	|	}		

This table shows the OCR-A character set.

The *Barcode&More* OCR-B font character table is the same.

Chapter 8 - BarDIMM Language Syntax

8.1. T parameter Esc(s#T (Typeface): barcode type

24600	UPC-A	24620	EAN/JAN-8
24601	UPC-A +2	24621	EAN/JAN-8 +2
24602	UPC-A +5	24622	EAN/JAN-8 +5
24610	UPC-E (UPC-E0 & UPC-E1)	24630	EAN/JAN-13
24611	UPC-E +2	24631	EAN/JAN-13 +2
24612	UPC-E +5	24632	EAN/JAN-13 +5
24640	25 (2 of 5) interleaved	24650	25 industrial
24641	25 interleaved + CHK	24651	25 indust + CHK
24642	German Postal 25 Leitcode 13	24660	25 matrix
24643	German Postal 25 Leitcode 11	24661	25 matrix + CHK
24670	39 (3 of 9)	24700	128 autoswitch
24671	39 + CHK	24701	128 A
24672	39 (3 of 9) encode space before data	24702	128 B
24673	39 + CHK encode space before data	24704	128 C
24680	39 extended	24703	128 C (obsolete)
24681	39 extended + CHK	24710	UCC-128 19digits only
24675	Danish PTT 39 barcode	24720	EAN/UCC-128
24676	French Postal 39 A/R		
		24770	ZIP+4 POSTNET 5

24690	93	24771	ZIP+4 POSTNET 9
24691	93 extended	24772	ZIP+4 POSTNET 11
		24775	Intelligent Mail Barcode
		23591	USPS ZEBRA
24644	USPS 25, 11 digits Tray Label barcode		
24645	USPS 25, 8 digits Sack Label barcode	24760	MSI
		24761	MSI +CHK10
24750	CODABAR	24762	MSI+CHK10 +CHK10
24751	CODABAR +CHKmod16	24763	MSI+CHK11+CHK10

24780	Singapore 4 State	24800	UPS MaxiCode™
24785	Australia 4 State 37-CUST	24820	Data Matrix™
24786	Australia 4 State 52-FF-MET	24830	Aztec
24787	Australia 4 State 67-FF-MET	24840	Codablock F
24790	Royal Mail 4 state Customer code	24850	PDF417
24795	Netherlands KIX postal barcode	24855	Macro PDF417
		24860	QRCode™ Model 1
24810	GS1 DataBar-14/RSS-14™	24861	QRCode™ Model 2
24811	GS1 DataBar-14/RSS-14 Truncated	24899	OMR marks
24812	GS1 DataBar-14/RSS-14 Stacked		
24814	GS1 DataBar/RSS Limited		
24815	GS1 DataBar-14/RSS Expanded		

Please read the *2D Barcodes Information* chapter for more information.

8.2. p parameter Esc(s#p - caption text format

8.2.1. 1-D BARCODES:

Control if/how human-readable (caption) text is printed with bar code

0	Use default value
1	Don't print human readable text
2	Print human readable text embedded
3	Print human readable text half-embedded
4	Print human readable text under code
5	Print human readable text above code

Specials:

- Add 10 to print UPC/EAN/JAN checksum middle left rather than bottom left of bar code.
- Add 10 to print start&end * characters with 39 bar code text
- Add 10 to not ignore (and) in string to barcode as EAN128
- Add 20 to format text for French and German postal barcodes
- Add 100 to print checksum character with text.

Example: text under code for French postal barcode: 24p

8.2.2. AUSTRALIA POST 4STATES BARCODE:

0	Use N symbol set for Customer Information (digits only)
1	Use C symbol set for Customer Information (alphanumeric)

8.2.3. 2-D BARCODES:

PDF417:

- 0 to 8: defines the ECC (error correction) level

- 1000 to 1400: defines the ECC level based on the size of the codeword relative to the data size, in percent (0 to 400). The matching ECC level will automatically be calculated.

Aztec:

- 0: Default ECC (error correction) level of 23% + 3 Codewords
- 1 to 99: defines the ECC (error correction) level in %
- 101 to 104 = #layers (+100) in Compact format
- 201 to 232 = #layers (+200) in Full-Range format
- 300 = Aztec "Rune" format

QRCode:

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

8.2.4. OMR:

OMR rotation:

- 0: Horizontal OMR marks (default)
- 1: Vertical OMR marks

8.3. h parameter Esc(s#h - caption text font

8.3.1. 1-D BARCODES:

Controls what font is used for the human-readable (caption) text and what color for both bars and caption text

Format: DCBA, numeric value, where

A: Typeface

- 0 Use Courier to print text (default)
- 1 Use Letter Gothic to print text
- 2 Use Univers to print text
- 3 Use Univers Condensed to print text
- 4 Use CG-Times to print text

- 5 Use OCR-B to print text (great with UPC/EAN)

B: Size

- 0 Use automatic font size

C: Style

- 0 Use Default (Bold)
- 1 Use Regular
- 2 Use Italics
- 3 Use Bold
- 4 Use Bold Italic

D: Color

- 0 Black (default)
- 1 White
- 2 Red
- 3 Green
- 4 Yellow
- 5 Blue
- 6 Magenta
- 7 Cyan

Example: text in Univers Bold Italic, red bars&text: 2402h

8.4. v parameter Esc(s#v - bars height

8.4.1. 1-D BARCODES:

Short bar height in 1/60th of inch (0.42mm)

Minimum sizes apply.

Example: Barcode in size 1 inch (25.4 mm): 60v

8.4.2. 2-D BARCODES:

QRCode, Aztec:

- 0 Normal
- 1 Reverse Video

MacroPDF417: Barcodes matrix height

- #1, Number of PDF417 per column before starting a new column (default:1)
- #2, Kept for future usage

Example: Up to 2 PDF blocks in height for MacroPDF417: 2v

PDF417 and Macro PDF417: PDF417 block maximum height and width

- #3, Maximum width in dots for PDF417 block (in 600th of inch)
- #4, Maximum height in dots for PDF417 block (in 600th of inch)

Codablock: barcode size

- #1, single line bar height in 1/60th of inch (0.42mm), same unit as fonts
- #2, Maximum number of rows for the Codablock symbol
- #3, Maximum number of columns for the Codablock symbol

Example: Lines pointsize 20, 5 rows/20: 20,8,10v

OMR:

- OMR mark length in 1/60th of inch (0.42mm)

Example: 1 inch long OMR mark: 60v

8.5. b parameter Esc(s#1,#2,#3,#4b - bars

8.5.1. 1-D BARCODES:

Bar Widths

- #1, bar width, first (thin) width in dots (1/600 inch)
- #2, bar width, second width in dots (1/600 inch)
- #3, bar width, third width in dots (1/600 inch)
- #4, bar width, fourth width in dots (1/600 inch)

Example: Thin bars 4 dots, thick bars 8 dots: 4,8b

8.5.2. 2-D BARCODES:

PDF417: Symbol format parameters

- #1, Maximum number of rows for the PDF symbol
- #2, Maximum number of columns for the PDF symbol
- #3,
  - =1 #1 and #2 are the mandatory size for the PDF symbol
  - =0 or not specified: #1 and #2 are maximum size (default)
- #4,
  - =1 The PDF417 symbol is truncated on its right side
  - =0 The PDF417 symbol is not truncated (default)

Example: 8 columns, 10 lines mandatory size, non truncated: 8,10,0b

Data Matrix, QRCode: Symbol format parameters

- #1, Small module height in dots (1/600 inch)

Aztec: Symbol format parameters

- #1 Small module height in dots (1/600 inch)
- #2 Bar undercut parameter. Value: 0 to (#1)-1 dots, default = 0

Codablock: B parameters like for 1D Barcodes

OMR: OMR mark thickness in dots (1/600 inch)

- #1, regular mark thickness, in dots (1/600 inch)
- #2 heavy mark thickness, in dots (1/600 inch)

Example: 1/010 inch for thin mark and 1/020 inch for thick mark: 6,12b

8.6. s parameter Esc(s#1,#2,#3,#4s - spaces

8.6.1. 1-D BARCODES:

Space Widths

- #1, space width, first (thin) width in dots (1/600 inch)
- #2, space width, second width in dots (1/600 inch)
- #3, space width, third width in dots (1/600 inch)

- #4, space width, fourth width in dots (1/600 inch)

Example: Thin spaces 4 dots, thick spaces 8 dots : 4,8s

Note: the b parameters can be sent alone if the b and s parameters are identical. It allows sending shorter PCL barcoding commands to the printer.

8.6.2. 2-D BARCODES:

PDF417: Symbol format parameters

- #1, Symbol black/white module height compared to the width (1 to 10). Unit=minimum module width (default=3)
- #2, X parameter for the symbol X/Y size ratio (default: 2 for 2/3)
- #3, Y parameter for the symbol X/Y size ratio (default: 3 for 2/3)
- #4, Symbol module min width (1 to 100).

Unit=1/100 inch (default value=10).

The width value triggers a predefined scaling of the base barcode.

Example: square PDF, minimum module width, smaller module size: 1,1,1,5s

QRCode:

#1: Symbol set for input data

- 0 Use default (Automatic: JIS/ShiftJIS)
- 1 Numeric (0to9)
- 2 Alphanumeric (0to9, uppercase A to Z, space $%*+-. /:)
- 3 Binary 8-bits/byte data (JIS 8-bit character set (Latin and Kana) in accordance with JISX0201)
- 4 Kanji characters (Shift JIS values 8140h to 9FFCh and E040h to EAA4h shifted from JIS X0208)

Example: QRCode, alphanumeric data: 2s

OMR: OMR mark spacing in dots (1/600 inch). Default value=85 (1/7 inch)

Important notes:

Please read the *2D Barcodes Information* and *Fonts and Macros* chapters for full information on barcode symbology*** and symbols.

For Code 128 and EAN128, please read the *SAP R/3 Support* section for information on FNC codes.

Parameters cannot have decimals, i.e. **2.5** is invalid.

Barcode parameters must be combined in a sequence ending with the T parameter, e.g.

<ESC>(s4p305h24v7,21s7,21b24670T

End the data to the barcode with a valid PCL5 regular font sequence, such as:

<Esc>(10U<Esc>(s0p12hbs4099T

When using default parameters, only the commas are required if other parameters have not been defined, e.g.

<ESC>(s6p1,,,5s24850T

Chapter 9 - Code 128 Control Codes

Code 128 has five non-data special control codes, called FUNCTION CODES, and 2 control codes to switch from one 128 set (A, B or C) to another. The switching control codes are used by BarDIMM Pro and BarDIMM Box to force one 128 set. As an example, the string **`123456`** can be printed with both sets A, B, and C. Inserting a character with ASCII value = 134 at the beginning of the string will force BarDIMM Pro and BarDIMM box to use the set B of code 128.

Those special control codes can only be used with the 128 Autoswitch and the EAN128/UCC128 barcodes.

Note that both Code 128 Autoswitch and EAN 128 analyze the data and optimize the barcode length by switching automatically between sets A, B and C. EAN128 and UCC-128 already include the FNC1 code as the first character: you should not send it with the data.

Special control codes are inserted by passing the following special decimal characters in the bar code:

128 = SHIFT

129 = FNC 1

130 = FNC 2

131 = FNC 3

132 = FNC 4

133 = CODE A

134 = CODE B

135 = CODE C

Chapter 10 - Supported Operating Systems and Software

10.1. MS-Windows Support

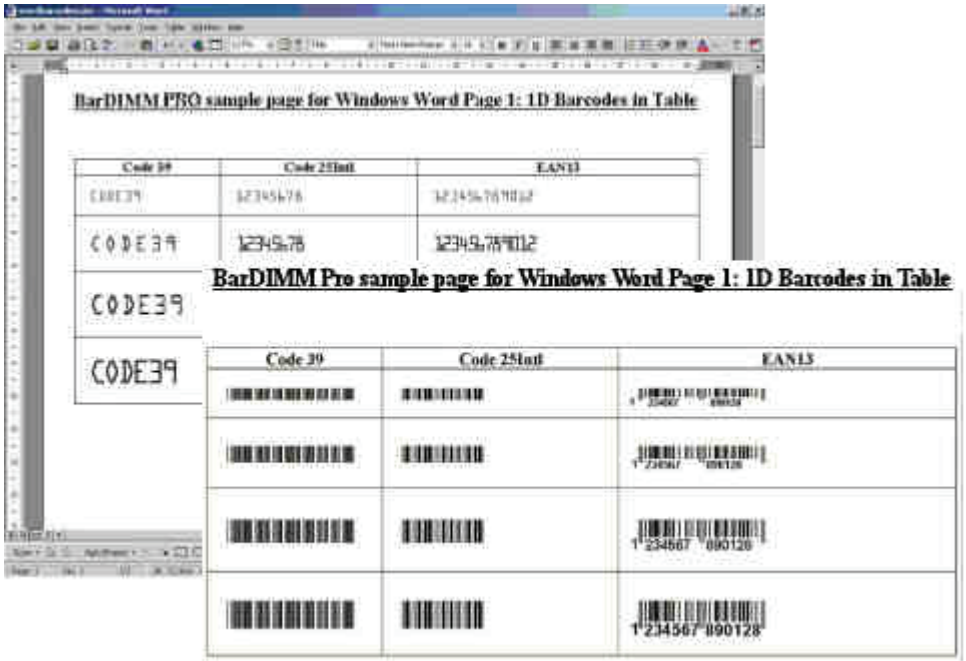
You may use BarDIMM Pro and BarDIMM Box functionality with a PCL5 driver from your word processor, spreadsheet or other Windows 3.1/95/98/ME/NT/XP/2003 based applications using BarDIMM special TrueType fonts generator: BDTTGEN.

BDTTGEN is available at no cost from our web site: http://www.jetmobile.com

BDTTGEN generates special Windows TrueType fonts that fit your Windows barcode printing needs. BDTTGEN also installs and manages those TrueType fonts in your system.

These fonts activate BarDIMM Pro and BarDIMM Box language features and just need to be used in documents to generate at print time high resolution and readability barcodes. Barcodes are not visible on the screen, as data might need to be visually verified before printing.

A special TrueType font also allows you to activate PCL5 macros and forms stored BarDIMM Pro permanent Flash Storage.



For free-text 2D Barcodes (PDF417, QRCode, DataMatrix, Aztec), encoding a paragraph is performed by creating a text box (Insert/Text box) and to assign the 2D barcode TT font to the full text in the box. This Scheme can also be used to put barcodes anywhere on the page, independently from other texts.

Note that alphanumerical barcode data cannot start with a space/blank.

Please read the BDTTGEN manual for more information on all capabilities.

10.2. SAP R/3 Support

BarSIMM/BarDIMM, BarDIMM Pro and BarDIMM Box functionalities are supported standard by the SAP R/3 software.

SAP OSS notes are available from the http://www.jetmobile.com web site.

- OSS note #5196 lists standard R/3 barcode names and supported device types for printing barcodes.
- BarDIMM language commands are built into the HP device types by SAP.
- Modifications are only required for special Barcode types and sizes.
- OSS note #45643 lists PCL-5 command details for barcode attribute selection.
- BarDIMM language commands are maintained as *Print Controls* in SPAD.
- SE73 transaction lists barcode names and print-controls for every device type.
- Barcode on: Print-control SBPxx
- Barcode off (regular font): SBSxx
- A test text is built into R/3: SO10, SAPSCRIPT-BARCODETEST (client 000).
- The SAP print control for OCR-A is SF400 and SF500 for OCR-B.

Note: In the early release of the device type, there were a few errors in the escape sequences. It is then recommended to verify the escape sequence syntax in R/3.

SAP has pre-defined a list of size and parameters for barcodes. If these don't match your needs, you may modify the controls (copy the controls into the user Z-environment and modify them based on your needs). The barcode activation strings are easily defined using this manual or the interactive BDTTGEN utility for Windows.

Note: All print controls are defined in R/3 using Hexadecimal values (1B for <Esc>...).

For more information on using BarDIMM Pro and BarDIMM Box with SAP R/3,like on inclusion of FNC1 codes in EAN128 barcodes, please check the www.jetmobile.com web site, FAQ section.

10.3. Generic ERP, Unix AS/400 and Mainframes Support

Other ERPs (Oracle, JD Edwards, BAAN, Peoplesoft) can use BarDIMM Pro and BarDIMM Box features by including BarDIMM language commands in output scripts (using the Freescape char if necessary), or by using the BarDIMM TrueType fonts for Windows-based applications.

On Unix system, AS/400 (in SCS mode only) and Mainframes (in SCS mode only), you just need to enter in your spools definitions the ASCII barcode activation BarDIMM Language commands string followed with the data to barcode to get nice looking barcodes. The barcode activation strings are easily defined using this manual or the interactive BDTTGEN utility for Windows.

Chapter 11 - BarDIMM Language Commands Examples

Here is an example of a valid BarDIMM language command sequence to select a barcode:

<Esc>(s4p102h40v10,30b10,30s24670T<data>

24670T	Symbology***: code 39, not encoding spaces before/after data	
4p	Readable text below bars, without start/stop chars(*)	
102h	Caption text in Univers Regular	
40v	Bars height: 40 points	40/72=0.555 inches 40*2.54/72=1.41 cm
10,30b	Thin bars are 10 dots wide, thick bars are 30 dots wide	
10,30s	Thin spaces are 10 dots wide, thick spaces are 30 dots wide	
<data>	The data to convert into barcode	

11.1. Barcode Rotation:

To rotate a barcode, you can use PCL rotation commands. It is recommended you save the cursor position before activating the barcode, and restore the position after the barcode. Here is an example (sequences should be entered without carriage return):

<Esc>&fS	Save cursor position
<Esc>&a1000h1000V	Cursor positioning
<Esc>&a90P	90° rotation
<Esc>(s4p102h40v10,30b10,30s24670T	Select Barcode
JETMOBILEBARDIMM	Barcode Data

<Esc>(10U<Esc>(sp10hsb4099T	Switch back to Courier 10cpi font
<Esc>&aP	No more rotation
<Esc>&lf1S	Restore saved cursor position

Other Information

Permanent and secondary fonts switching can be used with barcode fonts. It is highly recommended that a text font be used as primary font, and barcode font as secondary font. (please refer to the PCL developer guide for all information on primary and secondary fonts).

Complete BarDIMM language sequences samples are available at www.jetmobile.com, in the FAQ section.

Warning:
The BarDIMM language is not the PCL language. Therefore, some limitations apply regarding command compatibility:
- No font ID can be linked to a barcode created with the BarDIMM language
- The BarDIMM language cannot be used from HPGL2, Postscript or PCL6

Chapter 12 - Default Parameters

Barcode Name	Height	TextFlag	Bar width 1	Bar width 2	Bar width 3	Bar width 4
GTIN-12 (UPC-A)	74	3	8	16	24	32
UPC-E	29	3	8	16	24	32
GTIN-8 (EAN-8)	50	3	8	16	24	32
GTIN-13 (EAN-13)	62	3	8	16	24	32
CODE 2/5	29	1	6	18	-	-
CODE 39	29	1	6	18	-	-
39 EXT	29	1	6	18	-	-
CODE 93	29	1	6	18	-	-
93 EXT	29	1	6	18	-	-
CODE 128	29	1	6	12	18	24
GS1-128 (EAN 128)	29	1	6	12	18	24
UCC 128	29	105	6	12	18	24
CODABAR	29	1	6	12	-	-
MSI PLESSEY	29	1	6	12	-	-
ZIP+4	9*	1*	-	-	-	-
USPS Tray Label	50.4	4	9*	27*	-	-
USPS Sack Label	50.4	1	9*	27*	-	-
German Postal 25	72	124	10	30	-	-
French Postal 39	36*	124*	7*	21*	-	-
Singapore 4 State	13.5*	1*	-	-	-	-
UK 4 State	13.5*	1*	-	-	-	-
Netherlands KIX	13.5*	1*	-	-	-	-
Australia 4 State	13.5*	N/A	-	-	-	-
MaxiCode	1x1 inch	N/A	N/A	N/A	N/A	N/A
PDF417	Auto	N/A	N/A	N/A	N/A	N/A
Data Matrix	Auto	N/A	N/A	N/A	N/A	N/A
QRCode 1/2	Auto	N/A	N/A	N/A	N/A	N/A
Aztec	Auto	N/A	N/A	N/A	N/A	N/A
Codablock	16	1	6	12	18	24
OMR marks	45¤	N/A	7¤	14¤	-	-

*: Fixed values, cannot be overridden by the user
¤: Special usage, might not correspond to column title
N/A: Not Applicable

Notes:

- Height corresponds to the h parameter, TextFlag to the p parameter and the four bar widths to the b parameter.
- Height is in 1/60th of inch, and bar widths are in 1/600th of inch.
- Spaces default values are the same as for bars.

Chapter 13 - Bar Code Formats Characteristics

13.1. Size

Barcode type	Characters encoded (1)	Input length* (2)	Char width Unit=thin bar width	Compression	Start/Stop (3) size (in thin bar)	Checksums * = optional
GTIN-12 (UPC-A)	D	11	7	N	11	1
GTIN-13 (UPC-E)	D	11 or 6	3,5 (for 11)			
7 (for 6)	Y (for 11)	14,5 (for				
11 (for 6)	1 (for 11)					
GTIN-8 (EAN/ JAN-8)	D	7	7	N	11	1
EAN/JAN-13	D	12	7	N	11	1
Supplemental 2 or 5 for EAN/UPC	D	2 or 5	9	N	13	0
CODE 39	DPU	1 to 99	16	N	32	*1
39 EXT	DPULC	1 to 99	DU:16 PLC:32	N	32	*1
Interleaved 2/5	D	2 to 100	9	Y	12	*1
Industrial 2/5	D	2 to 100	14	N	20	*1
Matrix 2/5	D	1 to 99	10	N	18	*1
GS1-128 (EAN-128)	DPUCL	1 to 99	data dependant	Y	>=35	1
Code 128 Auto	DPUCL	1 to 99	data dependant	Y	24	1
Code 128A	DPUC	1 to 99	11	N	24	1
Code 128B	DPUL	1 to 99	11	N	24	1
Code 128C	D	1 to 99	5,5	Y	24	1
UCC128	D	1 to 99	5,5	Y	51,5 (CHK)	2
GS1-14 (RSS14)	D	13	6	N	12	1
Codabar	DP	1 to 99	12	N	0	*1
MSI PLESSEY	D	1 to 99	12	N	8	*1 or 2
CODE 93	DPU	1 to 99	9	N	19	2
93 EXT	DPULC	1 to 99	DU:9 PLC:18	N	19	2
ZIP+4	D	5,9 or 11	29/600 Inch	N	5,8/600 Inch	1
Singap. 4State	D	6	88/600 Inch	N	22/600 Inch	1

Barcode type	Characters encoded (1)	Input length* (2)	Char width Unit=thin bar width	Compression	Start/Stop (3) size (in thin bar)	Checksums * = optional
UK 4State	DU	7, 8 or 9	88/600 Inch	N	22/600 Inch	1
NL KIX	DU	5 to 12	88/600 Inch	N	22/600 Inch	0
AP 37-CUST	D	8	44/600 Inch	N	44/600 Inch	1
AP 52-FF-MET	DUL	8+8D/5UL	44/600 Inch	Y (N table)	44/600 Inch	1
AP 67-FF-MET	DUL	8+15D/ 10UL	44/600 Inch	Y (N table)	44/600 Inch	1
Singap. ZIP+4	D	5,9 or 11	29/600 Inch	N	5,8/600 Inch	1
MaxiCode	DPLUC	up to 100	N/A	Y	N/A	Codewords
PDF417	DPLUC	up to 1848	N/A	Y	N/A	Codewords
Data Matrix	DPLUC	up to 2335	N/A	Y	N/A	Codewords
Codablock	DPLUC	up to 5366	data dependant	Y	46	1
Aztec	DPLUC	up to 3832	N/A	Y	N/A	Codewords
QRCode1/2	DPLUC	up to 7089	N/A	Y	N/A	Codewords

(1) D = Digits - P = Punctuation - L = Lower case letters - U = Upper case letters C = Control characters (ASCII 0 to 31)
(2) Checksum character not counted (3) Checksum size not counted except when indicated with **CHK**
N/A: Not applicable

13.2. Usage & Format

There are many standards used to encode the information as bars. BarDIMM supports most of the barcode standards:

13.2.1. GTIN-12 (Formerly UPC-A)

USA standard, for items sold to the public. GTIN-12 contains numeric data only and encodes a 12-digit number. The first one is the system number character, the next 5 digits are the supplier ID, the next 5 digits are the product number, and the last one, the required checksum character. You do not need to specify the checksum digit as BarDIMM Pro and BarDIMM Box recalculate it.

A digit is described by 2 bars and 2 spaces and its width is calculated as 7 thin bars.

The number character is printed as text on the left side or the bar code and the checksum on the right side.

The system number can have the following values:

- 0 or 7: Regular UPC codes
- 2: Random weight items
- 3: National Drug Code and National Health Related Items Code
- 4: For use without code format restriction and with checksum for non-food items
- 5: For use on coupons
- 1,6,8,9: Reserved

13.2.2. UPC-E (UPC-E0 and UPC-E1)

Ideal for small packages because of its data compression. It contains the same information as the GTIN-12 (UPC-A) except that there are minimum 4 zeros, which are suppressed. It reduces the number of digits from 12 to 6. BarDIMM Pro and BarDIMM Box accept the Zero Suppressed version of UPC-E in both versions of data, compressed and uncompressed. If data comes uncompressed, BarDIMM Pro and BarDIMM Box will perform automatically the compression.

A digit is described by 2 bars and 2 spaces and its width is calculated as 7 thin bars. Note that caption text below the barcode can be activated to verify checksum calculation.

13.2.3. GTIN-8 (Formerly EAN-8)

Used in Europe for items sold to the public. GTIN-8 contains numeric data only and encodes an 8-digit number. The first two are the country code, the next 5 digits are the product number, and the last one is the required checksum character. You do not need to specify the checksum digit as BarDIMM Pro and BarDIMM Box recalculate it.

A digit is described by 2 bars and 2 spaces and its width is calculated as 7 thin bars.

13.2.4. GTIN-13 (Formerly EAN-13)

European standard for items sold to the public, GTIN-13 contains numeric data only and encodes 13 digits number. The first two are the country code, the next 6 digits are the supplier ID, the next 4 digits are the product number and the last one is the required checksum character (this split varies from country to country). You do not need to specify the checksum digit as BarDIMM Pro and BarDIMM Box recalculate it. If the checksum is sent as a 13th digit, it is ignored and recalculated.

A digit is described by 2 bars and 2 spaces and its width is calculated as 7 thin bars.

The number character is printed as text on the left side or the bar code and the checksum on the right side.

All the EAN and UPC codes can be followed with two or five digits of supplemental information.

13.2.5. Code 39

The real name is *3 of 9 bar code*. It is probably the most commonly used bar code as it encodes not only digits, but also upper-case letters and punctuation. Spaces are encoded as bars. Text is encoded between start and stop characters " * " which are automatically generated by BarDIMM Pro and BarDIMM Box.

BarDIMM Pro and BarDIMM Box feature two flavors of 39 barcode call: with and without starting blanks. IDs 24670 and 24671 do not encode the space characters starting and ending the data to barcode. IDs 24672 and 24673 do encode the starting spaces.

13.2.6. Danish Postal 39 bar code

Special 39 code used on parcel labels for shipment through postal service in Denmark. Contains ten digits, a special checksum and ends with **DK**.

BarDIMM Pro and BarDIMM Box only needs the 10 digits.

13.2.7. French postal 39 bar code

Special 39 code used on registered letters forms (*Recommandés*) in France. Starts with **RA** or **RB**, then contains 8 digits, a special checksum, and ends with **FR**. BarDIMM Pro and BarDIMM Box only needs **RA** and **RB** and the 8 digits.

13.2.8. Extended 39

Based on the standard 3 of 9, it encodes all the ASCII characters by generating two characters for each character in the string to encode. Supports all ASCII codes from 0 to 126. Bar code pattern is quite large.

13.2.9. Interleaved 2 of 5

Numeric-only code, it requires an even number of digits in the string to be encoded. It can have from 2 to 30 digits. Also called *25 Interleaved*.

13.2.10. Industrial and Matrix 2 of 5

Numeric-only codes, it can have from 1 to 30 digits.

13.2.11. Code 128

New standard for most barcode labels. Code 128 is a very compact bar code for numeric and alphanumeric strings. It has 3 modes: A, B and C, which encode different range of characters. Code 128 auto is an exclusive BarDIMM Pro and BarDIMM Box feature that allows you to encode all the 128 ASCII characters without analyzing the string to encode and use the required Code 128 modes. BarDIMM Pro and BarDIMM Box analyze data and switch dynamically between sets A, B and C to provide the most compact code. Code 128 Auto is fully compliant with the new worldwide standard for pallet labels, which uses Code 128 mode B and C within the same pattern (ECR labels standard). To include special characters like FNC codes or SHIFT, please read the *Code 128 Control Codes* chapter in this manual.

13.2.12. GS1-128 (Formerly EAN-128) and UCC-128

Variable length bar code starting with FNC1 code and based on Code 128 sets A, B and C to encode the string. GS1-128 is used for pallets labels and EDI related barcode labels. BarDIMM Pro and BarDIMM Box add automatically the FNC1 code at the beginning and the checksums at the end.

GS1-128 symbology requires that tags are encoded between round brackets in caption text (and not in bars). BarDIMM Pro and BarDIMM Box automatically remove the ( ) symbols in barcode but keeps them for caption text (new feature since BarDIMM Pro and BarDIMM Box version 3.2).

13.2.13. German 25 Postal Barcode

Those special 25 interleaved codes are used on parcel labels for shipment through the postal service in Germany. Two codes are used on a label:

- The Leitcode is used to encode the destination area and requires 13 digits
- The Identcode is used to encode the tracking number and requires 11 digits

13.2.14. Codabar/Monarch

Encodes digits and punctuation characters. Used mostly for blood labeling.

13.2.15. Code 93

Compressed version of Code 39.

13.2.16. Extended Code 93

Compressed version of Extended Code 39.

13.2.17. MSI Plessey

Numeric-only, it is used on labels for grocery industry.

13.2.18. GSI DataBar-14 (Formerly RSS-14)

The GS1 DataBar 14 (formerly known as RSS-14) is a linear symbology that makes omnidirectional scanning easy. It encodes 14 digits of data used to identify the GTIN (Global Trade Item Numbers) for scanning in the supply chain (for Application Identifier '01'). BarDIMM Pro and BarDIMM Box can generate the DataBar in various flavours: DataBar-14, DataBar-14 Truncated (shorter bars height) and DataBar-14 Stacked (used where a narrower symbol is needed as the DataBar-14 is printed in two rows of two segments each).

DataBar-14 can also accept 2D Composite Components (CC). Please refer to DataBar-14 + CC in the 2D Barcodes sections further down this manual.

13.2.19. DataBar Limited / RSS Limited

The GS1 DataBar Limited (formerly known as RSS Limited) is a linear symbology that encodes the same data as defined for all four types of DataBar-14. The encoding process is different and limits the values assigned for Indicator digits to 1 or 0. This form of DataBar Limited can be printed very small and is not generally intended for omnidirectional scanning. DataBar Limited ontains two large data characters and a Mod 89 symbology check character. It does not have stacked or omnidirectional formats and is designed for small item identification.

13.2.20. DataBar Expanded / RSS Expanded

The GS1 DataBar Expanded (formerly known as RSS Expanded) is a variable length, linear symbology that is encoded differently than DataBar-14. This symbology allows up to 74 numeric or 41 alphabetic characters. This form of DataBar can be printed at densities that can be omnidirectionally scanned. It is used to to encode 14 digits of numerical data that can be used to identify GTIN for scanning in the supply chain DataBar Expanded encodes all EAN.UCC Application Identifier Element Strings. Special compaction methods have been designed to decrease the symbol size for common Element Strings.

13.2.21. ZIP+4 Postnet (USA Only)

Prints the zip code as a bar code to speed mail through the postal service. (US Post system)

13.2.22. USPS Intelligent Mail Barcode (USA Only)

Used since 2007, the USPS Intelligent Mail Barcode becomes mandatory in Fall 2009 for US companies looking for greater mail discounts.

Syntax for data:

```
barcode ID (2-digit), Special Service (3-digit), Mailer ID (6-digit),
Serial number (9-digit), Delivery Point zip code (0, 5, 9  or 11-digit)
```

Example: `05,987,978425,684745129,92130`

You may activate caption text below or above the bars, text is formatted automatically as per the USPS specs

13.2.23. USPS Tray Barcode (USA Only)

Used since 1997, bar-coded tray labels with a special 25 interleaved barcode are required for automation rate mailings of First-Class, Regular Periodicals, and Regular and Enhanced Carrier Route Standard Mail letter-size pieces and for First-Class flat-size pieces.

13.2.24. USPS 'Zebra' Barcode (USA Only)

The US Post system has defined the Zebra code. This is a series of diagonal lines to the right of the barcode that serves solely as a visual indication that a tray contains bar-coded mail. The code must not appear on tray labels for non bar-coded mail.

This standard is applicable since July 1997. Due to its simplicity, the Zebra code is implemented in BarDIMM as a font with just one diagonal thick bar coded in the slash character '/' (ASCII value 47).

Therefore, you have to call the font and send three consecutive slash characters without any space in between. Here are the PCL codes to send:<Esc>(10U<Esc>(s0p2.50h29vsb23591T///

13.2.25. USPS Sack Barcode (USA Only)

Effective July 1st, 1997, bar-coded sack labels with a special 25 interleaved barcode are required for automation rate Regular Periodicals and Standard Mail flat-size pieces prepared in sacks.

13.2.26. Singapore 4 State Barcode

The Singapore Postal Service is promoting the use of a 4 State barcode to speed mail sorting. This 4 State barcode encodes a 6 digits number and has a checksum appended to the data. You must make sure you give a 6 digits number to the BarDIMM, and BarDIMM will calculate and print automatically the checksum.

Note that 4 State barcodes must be ended with a regular text font escape sequence.

13.2.27. Netherlands KIX barcode

The Dutch Postal Service is promoting the use of a 4 State barcode to speed mail sorting. This 4 State barcode encodes a 5 to 12 characters string and has a checksum appended to the data. You must make sure you give a valid string to the BarDIMM. Note that KIX barcode must be ended with a regular text font escape sequence.

13.2.28. UK Royal Mail 4 State barcode

The UK Postal Service is promoting the use of a 4 State barcode to speed mail sorting. This 4 State barcode encodes a variable number of digits and letters and has a checksum appended to the data. You must make sure you give the correct digits and letters to the BarDIMM, and BarDIMM will calculate and print automatically the checksum. 4 state barcodes must be ended with a regular text font escape sequence.

13.2.29. Australia Post 4 State Barcodes

Established in 1998, 4 State barcodes are used to allow Australia Post to sort incoming mail via barcode read from letters (those barcodes are totally different from the 4 State barcode used in Singapore). There are three different types of barcodes corresponding respectively to FCC values 11, 59 and 62. BarDIMM only needs the DPID and Customer information, and generates automatically all the other information like the FCC or Reed-Solomon checksum.

For each type or code, the data must be sent in a specific BarDIMM-specific format:

- Standard Customer Barcode (37-CUST) with only the Sorting Code (DPID)
  <DIPD>
- Customer Barcode 2 (52-FF-MET), DPID and 16 bars of customer information
  <DIPD>,<CustomerInfo>
  Customer information can be 8 digits or 5 alphanumeric chars long
- Customer Barcode 3 (67-FF-MET), DPID and 31 bars of customer information
  <DIPD>,<CustomerInfo>
  Customer information can be 15 digits or 10 alphanumeric chars long

<DPID> is the Sorting Code, and must be 8 digits long, <CustomerInfo> is customer information, the p parameter selects the N or the C symbol set (numeric or alphanumeric).

Example: **<Esc>(s1p24787T12345678,7V 5<Esc>(s0p12h10v4099T**

For the P option for the Australia Post 4state barcode, please read carefully the PCL parameters descriptions in the *BarDIMM Language Syntax* chapter.

Chapter 14 - 2D Barcodes Information

To encode data including an Escape character (27 decimal, 1B hexadecimal), data must be enclosed in a transparent mode sequence (please read the *Transparent Print Data Mode* paragraph in the *How BarDIMM Pro and BarDIMM Box Work* chapter).

14.1. UPS MaxiCode™

The MaxiCode barcode is a 2D barcode that consists of 884 hexagons surrounding a bull's-eye finder pattern. One bit of information is encoded by one hexagon. Up to 100 characters of information can be encoded in one square inch, which is the approximate fixed size of such a barcode. The MaxiCode symbology includes built-in error correction capability, automatic data compression and full ASCII character set.

MaxiCode has been created by UPS and endorsed by AIM (Uniform Symbology Specification MaxiCode) as a multi-purpose EDI-ready two-dimensional barcode. UPS uses MaxiCode to encode all information about the parcels, to provide a faster and better service to its clients.

Please read the *MaxiCode* section of the latest *Guide to Bar Coding With UPS OnLine For customers Generating Bar Code Labels* for format information.

MaxiCode data is a string made of a header, the ANSI message and an End Of Transmission code.

Hereunder is the detailed information found in the ANSI message for the UPS MaxiCode.

Please note that BarDIMM does not expect data in the same order. Please read the next paragraph for information on the data order.

Note: Always use uppercase characters for the MaxiCode data.

LIST OF MAXICODE INFORMATION FIELDS

Field name	Description	Required/Optional
Destination Postal code	5 or 9 Alphanumeric chars.	Required
Destination Country code	3 digits	Required
Class of service (3 digits)	3 digits	Required
Tracking number	10 or 11 Alphanumeric chars.	Required
Standard Carrier Alpha Code	UPSN	Required

Field name	Description	Required/Optional
Shipper number	6 Alphanumeric chars.	Required
Day of pick up	3 digits	Required
Shipment ID number	1-30 Alphanumeric chars.	Optional
Item x of n in total	1-3/1-3 digits	Required
Weight (lb.)	1-3 digits	Required
Address validation (Y/N)	Y or N	Required
Destination address	1-35 Alphanumeric chars.	Optional
Destination city	1-20 Alphanumeric chars.	Required
Destination state	2 alpha chars.	Required

The different fields are separated with the **<Gs>** (Group Separator, ASCII 29, HEX 1D). The barcode data terminates with the **<Eot>** (End of transmission, ASCII 04, HEX 04). To separate format types, use **<Rs>** (Field separator, ASCII 30, HEX 1E).

To separate primary and secondary address numbers, use **<Fs>** (Address field separator, ASCII 28, HEX 1C). BarDIMM expects to get both the primary and secondary messages from the application, separated by a comma.

The primary message data is composed of:

1. the label number (maximum: 8)
2. the number of labels for the current Package (maximum: 8)
3. the MaxiCode mode. Use 2 for domestic US shipments, 3 for international shipments
4. the postal code
5. the country code
6. the class of service

A comma must separate each of these parameters

The secondary message is composed of:

1. the ANSI Message Header [ )><**Rs**>
2. the Transportation Data Format Header 01<**Gs**>96
3. the Tracking Number (i.e.: 1Z00004951<**Gs**>)
4. the SCAC USPN<**Gs**>
5. the UPS Shipper Number (i.e.: 06X610<**Gs**>)

6.	the Julian Day of Pickup	(i.e.: 159**<Gs>**)
7.	the Shipment ID #	(i.e.: 1234567**<Gs>**)
8.	the Package n/x	(i.e.: 1/1**<Gs>**)
9.	the Package Weight	(i.e.: 10**<Gs>**)
10.	the Address Validation	(i.e.: Y**<Gs>**)
11.	the Ship To Address	(i.e.: 634 ALPHA DR**<Gs>**)
12.	the Ship To City	(i.e.: PITTSBURGH**<Gs>**)
13.	the Ship To State	(i.e.: PA)
14.	the End Of Format character	**<Rs>** (ASCII 30)
15.	the End Of Transmission	**<Eot>** (ASCII 04)

Note: UPS MaxiCode expects the secondary message to be padded with fill characters to a total of 84 total characters. BarDIMM takes care of this requirement and there is no need to pad the data on the right (the fill character is '!' ASCII 33, HEX 21).

Note: The secondary message cannot be longer than 84 characters. Therefore, the destination address length must be truncated if required if the total length for the secondary message is greater than 84 characters. This destination address is optional in the MaxiCode data. If data is too long, BarDIMM will not print the MaxiCode and prints an error message indicating by how many characters the length exceeds 84.

Note: Blank fields still must include the **<Gs>** separator.

After the **<Eot>** character, the application must immediately send a PCL escape sequence to switch to a font other than MaxiCode.

For example, to switch to Courier font 10CPI, the sequence is:

```
<Esc>(s0p10h12vbs4099T
```

Note: if you use a character set other than PC-8, you should resend the character set selection before selecting the new font.

Example:

```
<Esc>(s24800T1,1,2,152382802,840,001,[)><RS>01<GS>96995011234<GS>840<G
S>025<GS>1Z07000168<GS>UPSN<GS>WX9031<GS>272<GS><GS>1/
1<GS>15<GS>Y<GS>123<FS>300<GS><GS>AK<RS><EOT><Esc>(s0p10h12vbs4099T
```

14.2. DataBar/RSS + Composite Component

A Composite Component is a two dimensional bar code added to a **DataBar-14** or **DataBar-Expanded** barcode: it is not a true matrixed code, but a stacked linear bar code. CC is bi-directionally decodable therefore can be read with laser scanners. They have a binary-based encoding scheme optimized for EAN & UCC Application Identifier Element Strings. Special compaction methods have been designed to decrease the symbol size for commonly used Element Strings such as lot number and expiration date. All DataBar Composite symbols encode a linkage flag in both the linear component and the 2-Dimensional Composite Component to tell the scanner to continue scanning for the other component.

To add data in a CC call the regular DataBar symbology and send the data to encode as a CC after the digits for the DataBar code, separated by the character | (ASCII code 124):

Example with DataBar -14, **`JetmobileBarDIMMpro`** encoded as CC:

`<Esc>(s24810T1234567890123|JetmobileBarDIMMpro<Esc>(s0p10h12vbs4099T`

14.3. PDF417

The PDF417 is a high-density 2D barcode created by Symbol Technology and now an ANSI/AIM USA standard. This barcode is composed of a stack of rows with small black rectangles arranged in columns. The number of rows and columns can be user defined or set automatically to fit a ratio (2:3 is the most common ratio). PDF417 features built-in error correction capability, automatic data compression and full ASCII and binary character sets. It can encode up to 1848 characters of information per barcode, based on the compression level achieved.

PDF 417 supports two encoding modes: ASCII (Letters, punctuation and digits) and Binary (any binary value between 0 and 244) modes. ASCII mode has a better data density than the binary mode (maximum 106 versus 177 bytes per cm²) and can encode much more data than the binary mode (maximum 1848 bytes versus 1108 bytes). BarDIMM automatically selects the best encoding (binary or ASCII) for the supplied data.

Also, note that PDF417 has extensive error correction capabilities.

PDF417 barcodes are read with laser scanner and CCD cameras.

- Number of rows (min/max): 3/90
- Number of columns (min/max): 1/30

Note that **number of rows x number of columns** must be **less than 929**.

Data too long to be encoded in a PDF symbol can be encoded into a series of linked PDF417 symbols. This is called Macro PDF417 (please read below).

There are many options for the PDF417 symbol, activated using parameters of the font-like PCL sequence. Please read carefully the parameters descriptions in the *BarDIMM Language Syntax* chapter.

14.4. Macro PDF417

Data too long to be encoded in a PDF symbol can be encoded into a series of linked PDF417 blocks.

Macro PDF417 options are similar to the PDF417 barcode options, plus the maximum number of PDF417 symbols per column. When the maximum of blocks is reached a new colum is created on the right of the previous column, and so on until all data is encoded.

14.5. Data Matrix™

Data Matrix is a high density 2-D matrix code developed by RVSI - Acuity CiMatrix that can encode a lot of information in a very small space. The Data Matrix symbology*** has extensive error correction capabilities using ECC200 error checking. A Data Matrix symbol can store between one and 3116 numeric or 2335 alphanumeric characters, and is scalable between a 1-mil square to a 14-inch square.

Since the overall size of the Data Matrix symbol is infinitely scalable, the Data Matrix symbols can be read at virtually any distance, given the right combination of Data Matrix size and reading equipment.

BarDIMM can scale the code with the definition of the small black square height/width. BarDIMM will automatically optimize the encoding (binary, text, digits) by analyzing the data on the data.

For the options for the Data Matrix symbol, please read carefully the PCL parameters descriptions in the *BarDIMM Language Syntax* chapter.

14.6. Aztec Code™

Aztec Code is a 2D matrix barcode symbology*** developed by Welch Allyn designed to combine the best characteristics of several 1st generation symbologies,*** with special attention paid to ease of printing, ease of finding in any orientation, allowance for field distortion, high data security with user-selected redundancy, and efficient storage over the range from small to large data messages. The smallest Aztec Code symbol encodes 13 numeric or 12

alphabetic characters, while the largest Aztec Code symbol encodes 3832 numeric or 3067 alphabetic characters or 1914 bytes of binary data. BarDIMM can scale the code with the definition of the small black square height/width.

For the options for the Aztec Code symbol, please read carefully the PCL parameters descriptions in the *BarDIMM Language Syntax* chapter.

14.7. Codablock F

Codablock F is a 2D barcode developed by ELMICRON, as an extension of CODE 128. Within its capacities, it is possible to cut a given CODE 128 into several pieces and to arrange them in a multiple rows symbol. A Codablock symbol may contain 2 to 44 rows of 1 to 61 characters (up to 122 for numeric data per row), and supports most features from Code 128.

For more information on code 128 features, please read *Code 128* data in this manual.

For the options for the Codablock symbol, please carefully read the PCL parameter descriptions in the *BarDIMM Language Syntax* chapter.

14.8. QRCode™

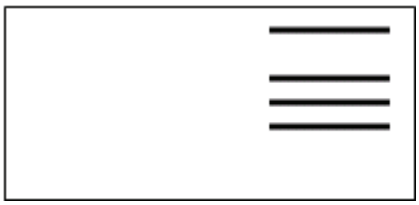
QR code is a two-dimensional matrix symbol developed by DENSO Corporation. It is available in two models-Model 1 and Model 2 (an enhanced version of Model 1). The BarDIMM system supports four-level error corrections and a wide range of symbol sizes. BarDIMM can scale the code with the definition of the small black square height/width.

A QRCode symbol can include numeric and alphanumeric data with high compression, binary, Kana and Kanji data. Maximum number of characters per QRCode symbol:

QRCode	Model 1	Model 2
Numeric	1,167	7,089
Alphanumeric	707	4,296
8-bit byte char.	486	2,953
Kanji characters	299	1,817

14.9. OMR marks

OMR marks are horizontal or vertical black solid lines found on printed mailing sheets. The mail processing machines check for these lines on every page fed in the system. The tracking of these marks triggers mechanical processes like the folding of all pages that should be inserted together in an envelope.



BarDIMM can generate OMR marks used by insertion/folding/Sealing systems found in mailrooms. Using BarDIMM makes it easy to put those marks in ERP, Unix, DOS or Windows documents.

There is no standard for OMR marks; the specifications vary per machine and per OMR scanning software (please refer to your mailroom system brochures for your own OMR marks requirements). But BarDIMM can be configured to fit any specification.

Width, spacing and length marks can be defined using the b, s and v parameters.

Note: Some system use thicker marks for start/stop, some use only one type of mark for all marks.

Usage: Only 3 characters can be used in data for OMR: '0', '1' and '2':

- 1: Regular mark (thickness defined by the 1st parameter for b)
- 2: Heavy mark (thickness defined by the 2nd parameter for b)
- 0: Mark skipped

Marks are defined in the data from top to bottom.

Chapter 15 - Fonts and Macros

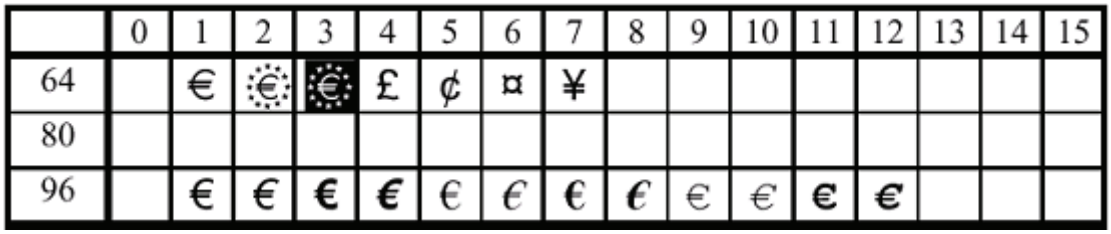
15.1. Euro Currency Symbol and Additional Fonts

BarDIMM features the old HP Barcode & More cartridge (C2053A) fonts and some scalable logos that can be used together with barcodes, on labels and other documents: Euro symbols, manufacturing, electronics and safety symbols. Barcode & More fonts (specific to BarDIMM Pro) and special logos are accessible through fonts, using standard PCL-5 font commands. To use those fonts from Windows 3.X/95, a PCM file for the PCL driver is available from the www.BarDIMM.com Web site. The Euro symbols font is available on all HP LaserJet / Business Ink Jet models, but the *Manufacturing and Safety Symbols* and *Electronics and Safety Symbols* scalable logo fonts are not available in BarDIMM for HP LaserJet 4, 4Plus, 4Si, 4P, 4V, and 4Si for technical reasons.

15.1.1. Euro and other Currency Symbols

Escape sequence: **<Esc>(10Q<Esc>(s1p<size>vsb10452T**

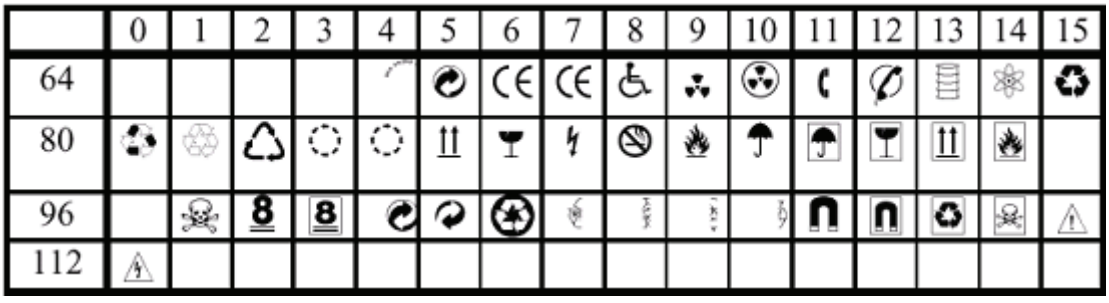
where **<size>** is the symbol size in points (1/72th inch)



15.1.2. Manufacturing and Safety Symbols

Escape sequence: **<Esc>(10Q<Esc>(s1p<size>vsb10400**T

where **<size>** is the symbol size in points (1/72th inch)



15.1.3. Special Multi-Character Symbols

Green point **<Esc>)10Q<Esc>)s1p20vsb10400TE**

with text **<Esc>)10Q<Esc>)s1p20vsb10400TDE**

with gray arrows **<Esc>)10Q<Esc>)s1p20vsb10400Td**

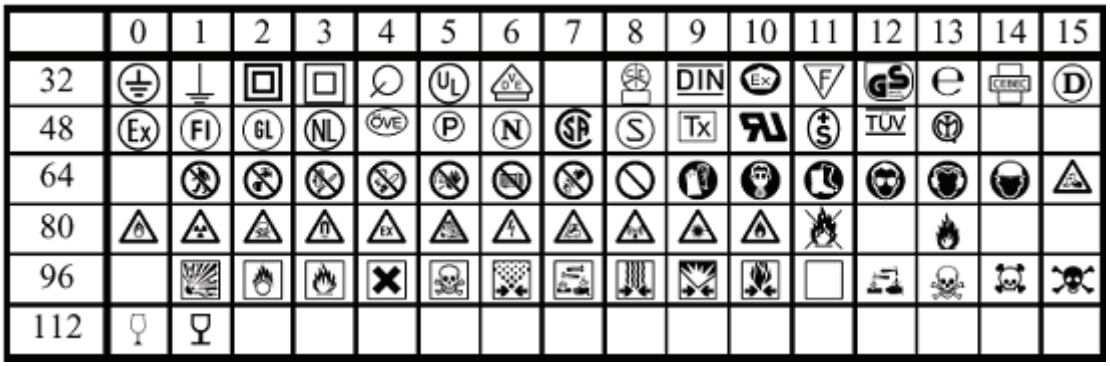
<Esc>*c15G<Esc>*v2Te<Esc>*vT

Recycling logo **<Esc>(10Q<Esc>(s1p20vsb10400Tghij<8>123**

15.1.4. Electronics and Safety Symbols

Escape sequence: **<Esc>(10Q<Esc>(s1p<size>vs3b10400T**

where **<size>** is the symbol size in points (1/72th inch)



These symbols are from the font library of Elsner und Flake Fontinform GmbH, Hamburg.

15.2. Odette Transport Label Macros

BarDIMM Pro and BarDIMM Box contains the VDA 4902 / Odette label used in the automobile industry. This label is included as PCL5 macros callable from any application using their number.

- In Windows: using the *Macro* BarDIMM special TTF font
  - Install the Macro Exec TTF font, and enter the macro number using it.
- In SAP R/3, Oracle and other ERPs, using PCL5 commands.
  To print one empty label on the page, send the following sequence at the beginning of the page:
  ~&l1E~&a0h0V~&fs###y3x1S

  To print 2 empty labels on the page, send the following sequence at the beginning of

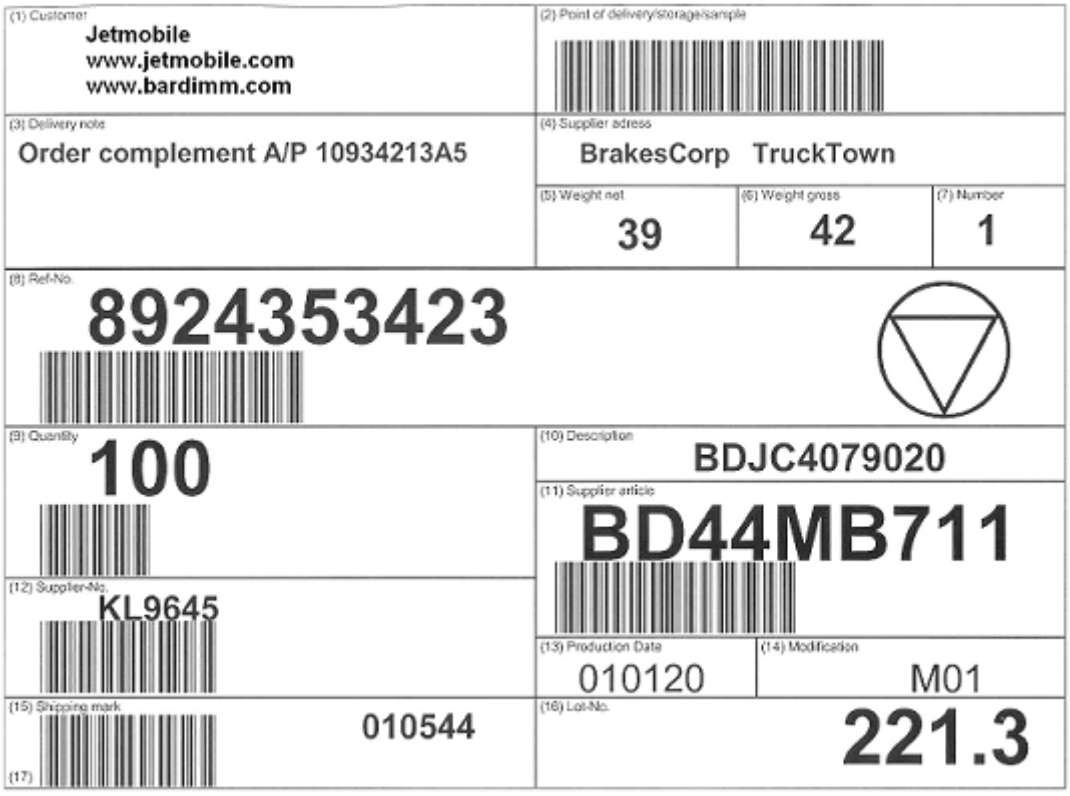
the page:
~&l1E~&a0h0V~&fs###y3x1S~&a0h4100V~&fs###y3x1S

Notes: ### must be replaced by the 3 digits macro number (read table below).

'~' in the sequences is the Freescape character. Replace it with its new value if it has been changed to another value through the <Esc>**#J escape sequence or from the printer front panel.

V3 German	V3 English	V3 French	V3 Italian	V3 Spanish	V4 English	V4 German
300	301	302	303	304	311	312

The safety symbol is available in the safety symbol font (read previous chapter).



Example of Odette label macro with data, barcodes and security symbol added

15.3. Loading Fonts and Macros

15.3.1. Loading Fonts and Macros in BarDIMM Pro

BarDIMM Pro features permanent flash disk storage, to store forms, fonts, macros, and logos on the printer. This storage can be managed using the latest version of HP Web JetAdmin or special tools like the third-party *Forms&Fonts Manager* software.

15.3.2. Loading Fonts and Macros in BarDIMM Box

The BarDIMM Box has an automatic loader that sends resources such as macros, fonts, signatures pre-printed pages etc. to the configured printer. This Loader sends the content of Macros folder to the printer at power-on and all the times the printer has a printer fault or a restart.

The BarDIMM Box supports the four standard hp PJL commands used to store files on LaserJet storage device suchas printer disk drive. By default the public area of the BarDIMM Box flash storage area is named disk `0:`.

With appropriate knowledge it is possible to create a file containing macros, fonts, etc, that will be stored on the BarDIMM Box and sent to the connected printer as a regular job at every printer start.

The file has to begin with a special 4 bytes header: #~#~

The supported PJL commands are:

- FSAPPEND
- FSDELETE
- FSDOWNLOAD
- FSMKDIR

File Example:

```
#~#~<Esc>%-12345X@PJL
<Esc>%-12345X@PJL
@PJL FSMKDIR NAME = "0:\macros"
@PJL FSDOWNLOAD FORMAT:BINARY NAME = "0:\macros\mymac.100" SIZE=19432
.................. (binary stream of 19432 bytes)
<Esc>%-12345X
```

15.4. Activating Macros

- In Windows: using the *Macro* BarDIMM special TTF font

    - Install the Macro Exec TTF font, and enter the macro number using it.
- In SAP R/3, Oracle, and other ERPs: using PCL5 commands to activate a PCL5 macro overlay or call.
  Macro Call: **<Esc>&f#y3X**
  Macro Overlay: **<Esc>&f#y4X**
  (in those sequences replace # with the macro number)

Chapter 16 - Troubleshooting

Barcode data is printed as text:

The printer may not have recognized the BarDIMM Pro or the BarDIMM Box may not be functioning properly. Please read the *Testing BarDIMM Pro for HP Printers* section in this manual.

Barcodes are not readable

Verify if the barcode reader is set up to read the symbology you are printing. If you have a doubt, please use the sample barcodes printed in the *Usage & Format* section in this manual. If your reader cannot read these barcodes, it is either defective or the symbology is not being read. Please refer to your barcode scanner regarding symbology activation and scanner usage.

How to stop barcode printing in a page:

Always send any other font selection sequence after the barcode data. Do not forget to send the character symbol set selection PCL command (eg: <Esc>(10U for PC-850).

Print jobs sent to the BarDIMM Box using PCL6, PDF or Postcript formats are corrupted:

Only send PCL5 print jobs to the BarDIMM Box as only this printer language is supported. Don't send directly PDF files to the printer through the BarDIMM Box.

In Windows, no barcode is printed:

Do not use any enhanced (PCL XL) or PostScript HP LaserJet/ Business Ink Jet printer driver. BarDIMM Pro and BarDIMM Box support only PCL 5 printer language.

Formatting the German Post barcode:

To print the code with the correct layout, use 124 for the p parameter and 300 for the h parameter: <Esc>(s124p300h24642T

Error message with 2of5 interleaved barcode:

The number of encoded digits must be even (multiple of 2). If you use a checksum, then you need to send an odd number of digits (the calculated checksum will add one character, making the total data length an even number).

Narrow barcodes are sometimes not readable:

Please read the *Bar Code Readability* chapter.

In all laser printers, very thin lines do not have a perfectly clean edge, due to the toner particle shape that is not square. The result is that narrow black bars are wider than blank spaces of the same width. The solution is to tune the width by using the B and S parameters to reduce the horizontal width of the thin black bars, or the S parameter to widen the thin white bars.

Barcodes on the very top of the page are not printed correctly

As barcodes are printed at the current cursor position from the baseline to the top of the page, they may not be printed correctly (wrong height or caption text in the middle of the barcode) if there is not enough room on top of the current cursor position. Make sure you set the cursor in a vertical position compatible with the barcode height.

On a LaserJet 4100 equipped with BarDIMM Pro, when the printer web page is accessed, the printer crashes with a 49.4274 ERROR message, or the embedded web server disappears.

This problem happens with the HP LaserJet 4100 when the embedded web server (the internal web page of the printer) is configured in any language other than English. To fix the problem, turn off the printer, remove the BarDIMM Pro, start the printer, access the printer web page using your browser and set the language to ENGLISH. You can now reinstall the BarDIMM Pro as indicated in the user manual.

When a PCL Font List is generated from the front panel of a hp LaserJet 4100, OCR-A and OCR-B fonts of the BarDIMM Pro do not appear in the font list.

This problem happens with the hp LaserJet 4100 font list. The OCR-A and OCR-B fonts are listed but the name bellow their representation is not readable or simply not there. This does not affect at all the printing with OCR-A and OCR-B fonts which are included in the BarDIMM Pro and are fully usable.

39 barcode is much longer than it should be, typically as wide as the page

When you position horizontally the cursor using blanks to put the barcode at the right place, you must send the barcode selection sequence after sending the space characters to move horizontally. If you do not do that, the spaces are part of the barcode data and the barcode is much wider than expected (usually across the page).

If you can only send the barcode selection sequence at the beginning of the line, use the special 39 symbologies with no starting spaces (IDs 24670 and 24671). This symbology will not include the starting spaces in the barcode data.

Barcodes in PCL5 Macros

Barcodes calling sequences cannot be inserted in PCL5 macros, but barcode sequence plus barcode data can be inserted in PCL macros. If an application needs to send multiple times the same barcode, it can include it in a PCL macro and invoke it the required number of occurrences. For more information on the PCL language and macros, please consult the FAQ section of the www.jetmobile.com web site.

16.1. Main Error Messages

BarDIMM Pro and BarDIMM Box feature a built-in debugging system for your bar codes. When an error condition occurs, a X is printed on top of the bars and the following error messages appear automatically under the bars. Most error messages are self-explicit.

!Err: Char=nn

Symbologies***: All

An invalid character was entered in the string to be printed as a bar code. 'nn' is the ASCII value of this character. Such an error occurs, for example, if you include a letter in a numeric-only bar code like EAN or 25.

Action: verify the data for the barcode.

!Err: Odd

Symbologies***: 2of5 Interleaved, with/without CHK, Code 128C

The string you try to print in the 2 of 5 Interleaved format has an odd number of digits. With 25 interleaved and 128C barcodes, digits are grouped by pair. Note that if you use the 25 Interleaved with checksum calculation, you must send an odd number of digits as the checksum digit will round it to an even number of digits.

Action: verify the string size, and send an even or odd number of digits

!Err: Length

Symbologies***: All

Invalid length for data to be printed as a bar code. This error message is produced when a data string is too short or too long. Please read the tables and barcode format characteristics pages in this manual.

Action: Verify if the data length fits the symbology*** specs.

!Err: NonZero and !Err: InvVal

Symbology***: UPC-E

There is a minimum of four zeros in a UPC-E barcode, and some positions must have very specific values. If BarDIMM Pro and BarDIMM Box find an unexpected value, this error message is printed.

Action: Verify if the data for the barcode fit the UPC-E symbology specs.

!Err: R/A/B

Symbology***: French Postal 39 A/R

The French registered mail barcode must start with either 'RA' or 'RB'. The string supplied to BarDIMM Pro and BarDIMM Box for barcode data does not start with those characters.

Action: Verify if the data for the barcode fits the symbology specs.

!Err: Fmt=00000000

Symbology: Australia Post 4 State 37-CUST

The 37-CUST barcode encodes the DPID, an 8 digits number. The DPID string supplied to generate such a barcode is not made of 8 digits.

Action: Verify the length of the DPID string.

!Err: Fmt=00000000,<CustInfo>

Symbologies: Australia Post 4 State 52-FF-MET and 67-FF-MET

The 52-FF-MET and 67-FF-MET barcodes encode the DPID, an 8-digit number, and the customer information which can be encoded using the N table if it only includes digits. Either the DPID string is not made of 8 digits, or there is no customer information defined in the string, or the comma separator is missing.

Action: Verify if the data for the barcode fits the symbology specs.

!Err: CustInfo: nonDigit

Symbologies: Australia Post 4 State 52-FF-MET and 67-FF-MET

The 52-FF-MET and 67-FF-MET barcodes encode the DPID and the customer information, which can be encoded using the N table if it only includes digits. The customer information defined in the string supplied to generate such a barcode includes at least one non-digit character.

Action: Verify the Customer Information data for the barcode.

!Err: CustInfo>NN (where NN is a value)

Symbologies: Australia Post 4 State 52-FF-MET and 67-FF-MET

The 52-FF-MET and 67-FF-MET barcodes encodes the DPID and the customer information which maximum length depends from the encoding table (N or C) defined with the p parameter. The customer information defined in the string supplied to generate such a barcode is too long, the maximum size is NN for the current parameters.

Action: Adapt the length for Customer Information data.

!Err: InvCharInCustInfo

Symbologies: Australia Post 4 State 52-FF-MET and 67-FF-MET

The 52-FF-MET and 67-FF-MET barcodes encodes the DPID and the customer information which can include a predefined set of characters. The customer information defined in the string supplied includes illegal characters.

Action: Verify the Customer Information data.

!Err: Codablock size

Symbologies: Codablock

The number of rows and columns indicated in the escape sequence do not leave enough room for data encoding.

Action: Increase the columns and/or rows barcode size.

Declaration of Conformity

We,
Jetmobile SAS
89 rue du Gouv General Eboue
92130 Issy les Moulineaux
France
declare under our sole responsibility that the products

BarDIMM Box and BarDIMM Pro

to which this declaration relates, are in conformity with the following standards and/or other normative documents.

PN - EN 55022 (10-2000)
PN - EN 55024 (09-2000)
FCC Part 15 Section 209

We hereby declare that the above named product is in conformity with the essential requirements and other relevant provisions of Telecommunication Directive (Dz. U.2000, nr 73 pos. 852).

The technical documentation relevant to the above equipment will be held at:

Jetmobile SAS
89 rue du Gouverneur General Eboue
92130 Issy-les-Moulineaux
France

Jean-François d'Estalenx
(Name)

(Signature)

Managing Director
(Title)

June 15, 2009
(Date)

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