TBarCode/SAPwin

Barcode DLL for SAPlpd, SAPsprint and SAPWIN

Version 6.0

User Documentation

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3 About TBarCode/SAPwin

3.1 Introduction

TBarCode/SAPwin is a generic, printer-independent extension for SAP®-systems for bar code printing. It upgrades virtually all printers available on the market with barcode printing functionality.

TBarCode/SAPwin can be used as „Barcode-DLL“ for SAPlpd, SAPsprint und SAP Clients (with SAPWIN.dll).

TBarCode/SAPwin

- prints barcodes on any printer supported by Microsoft® Windows®
- unifies bar-coding, barcodes are generated in a complete device independent way
- barcode fonts are not required
- reduces barcode printing costs - no special barcode printers are required
- generates more than 50 barcode symbologies (linear as well as 2D codes)
- is a cost-effective solution. The licensing scheme does not depend on the number of printers or users
- runs as plug-in for SAPlpd, SAPsprint and SAPwin.dll (Windows SAPGUI)

3.2 Linear and 2D Symbologies

Beside linear barcodes (e. g. 2 of 5, 2of5 interleaved, Code39, Code128, EAN128, EAN, UPC, RSS-14, ...) *TBarCode/SAPwin* supports also 2D and Multi-Row symbologies like:

- PDF417 + PDF417 Truncated
- MicroPDF417
- Data Matrix
- MaxiCode
- QR-Code
- Codablock F (stacked Code128)
- RSS Stacked Variants
- EAN.UCC Composite Symbology

These 2D-symbologies features very high data capacity with enhanced data security and are required by several enterprises for their documents (and labels) – a selection:

- MaxiCode by UPS®
- PDF417 by General Motors®
- PDF417 and MaxiCode by the AIGA (B-10, Automotive Industry Action Group).
- Data Matrix by SPEC2000 (Aviation)
- PDF417 by BMW (VDA BeloM)

3.3 Crystal-Clear Barcode Quality

TBarCode/SAPwin offers the possibility to specify all barcode related parameters. This enables the user to produce barcodes meeting all requirements:

- Device independent specification of the module width in absolute units
- Selection of the subsets of Code128 (subsets A, B and C – and automatic compression mode)

- Bar width reduction (Pixel Shaving) for enlarging printing techniques (inkjet..)
- Optimize bar width for actual printing resolution (OptResolution)
- Structured Append for 2D codes
- And many other parameters (see chapter 13 - Barcode Print-Control Reference)

4 Installation

4.1 Installation Steps

The first part of this document (chapter 5 to 10) covers the installation of *TBarCode/SAPwin*. The second part concentrates on bar-coding within SAP® R/3®, SAPScript®, SmartForms® and ABAP® in general.

In order to enhance SAP® with complete bar-coding features the following installation steps are required. Please follow these steps in the order specified.

Step	Operation	Chapter	Required	SAP Transaction
1	Install TBarCode/SAPwin	5	Yes	-
2	Create a Device Type Copy	6	Yes	SPAD
3	Assign the Device Type to a Printer	7	Yes	SPAD
4	Define Printer Barcodes	8	No	SE73
5	Test Barcode Printing	9	Recommended	SO10
6	Obtain a License	10	Yes	-

Table 1: Basic Workflow for Printing Barcodes

These steps are described in detail in the following sections.

TEC-IT's support is available for questions at any time. Please send an email to sap@tec-it.com.

4.2 System Requirements

TBarCode/SAPwin is a tool for generating barcodes in SAP® R/3®.

TBarCode/SAPwin is available as Barcode-DLL (32-Bit Windows DLL) and can be used with SAPlpd.exe, SAPsprint.exe or SAPWIN.dll (Windows SAPGUI).

Supported Platforms (only SAP-client or print-server platforms are relevant)	Microsoft® Windows® 95, Windows 98 , Windows ME, Windows NT, Windows 2000, Windows XP, Windows 2003. Client as well as server-operating systems are supported
SAP	SAPlpd V2.10 (SAP® R/3® Release 2.2) or higher. SAPsprint V1.0.0.1 / SAPwin.dll V 1.0.0.6 or higher
Host Spool Access Method	F, S or G

Table 2: System Requirements

5 Install TBarCode/SAPwin

5.1 SAPlpd, SAPsprint oder SAPWIN

TBarCode/SAPwin can be used with the listed SAP programs (or program parts).

5.1.1 SAPlpd

SAPlpd.exe is part of the Windows based SAPGUI and assumes the preparation of the SAPWIN data stream for Windows printer drivers. SAPlpd is addressed with host spool access method „F“ (Frontend Printing) or „S“ (SAPWIN). The SAPwin data stream is converted to the target printer language by using the installed Windows printer driver(s).

SAPlpd can be operated also with access method „U“ to work as spool server (Print data forwarding). In this case the print job is routed to the target printer without modification.

If needed, SAPlpd can be run stand-alone (without SAPGUI) on dedicated print servers (under Microsoft® Windows®).

5.1.2 SAPsprint

SAPsprint.exe is a tool for server based printing under Windows (access method „S“ and „U“). It acts like SAPlpd, but can be installed as Service. Thus it offers more stability by automatic restart on errors.

> ➢ For details see SAP Note 894444.

5.1.3 SAPWIN DLL

SAPWIN.DLL assumes the preparation of the SAPWIN print data stream in newer SAP client versions. The SAPWIN DLL is used also with front end printing through host spool access method „G“ („Control Technology“).

> ➢ For details see SAP Note 821519.

5.2 TBarCode/SAPwin

This installation manual assumes that `SAPlpd`, `SAPsprint` or the `SAPGUI` (with `SAPWIN.dll`) is already installed on the client or print-server.

> ➢ Since TBarCode/SAPwin acts like a „Plug-In“ for the above listed programs, it has to be installed into the same program path as the particular programs. This assures that the „Barcode.dll“ can be loaded automatically.

Perform the following steps to install *TBarCode/SAPwin*:

1. Download the latest version of *TBarCode/SAPwin* from http://www.tec-it.com
2. Start the program `TBarCode_SAPwin.msi`
3. Confirm all dialog boxes with `Next` and read (and accept) the license agreement.
4. Go ahead until you are asked for the installation path.
   - If you want to use TBarcode/SAPwin with SAPlpd (client or server), enter the path to SAPlpd.exe
   - If you want to use the product with SAPsprint, enter the path to SAPsprint.exe

- If you want to use the product on a SAP client with SAPWIN.dll (e.g. for front-end printing with access method G) enter the path to SAPWIN.dll.
- Alternatively the product can be installed into the Windows directory but we recommend to use the path of the particular programs.

5. The MSI setup contains two separate Barcode DLLs – one version for SAPlpd.exe and one version for SAPsprint (or SAPwin.dll). The setup tries to select the appropriate version automatically for you. If your installation path does not contain any SAP printing component, you have to select the correct Barcode DLL version manually.
6. Relevant for SAPlpd: After completing the setup routine, restart `SAPlpd` to make sure that the Barcode.dll and the Barcode.ini will be loaded.
7. The setup of *TBarCode/SAPwin* is completed.

> ➢ If you don't install the Barcode DLL through the provided setup, please see the information in section 21.4.5
>
> ➢ For further information about installation of `SAPlpd` or `SAPsprint` we refer to the appropriate SAP®-documentation.

5.3 Next step

Create a copy of a suitable device type (usually `SWIN`). Refer to the next chapter.

6 Create a Device Type Copy

SAP systems are shipped with predefined device types for generating the SAPWIN data stream (for printing through Windows Printer Drivers).

The name of the most important standard device type is `SWIN`. In order to change device-type specific parameters (e.g. adding or modifying barcode related Print-Controls) it is good practice to create a copy of this standard-device type and work with the copy.

> ➢ Predefined SAP device type definitions are set to standard values and should not be changed. Therefore creating a copy of a standard-device type is strongly recommended.

6.1 Copy a device type

Perform the following steps to create a copy of a device type

1. Start the spool administration (transaction SPAD) by choosing
   `SAP Menu ► Tools ► CCMS ► Spool ► Spool Administration`.
2. Choose
   `Utilities ► For device type ► Copy device type`
   to copy the definition of an output device.

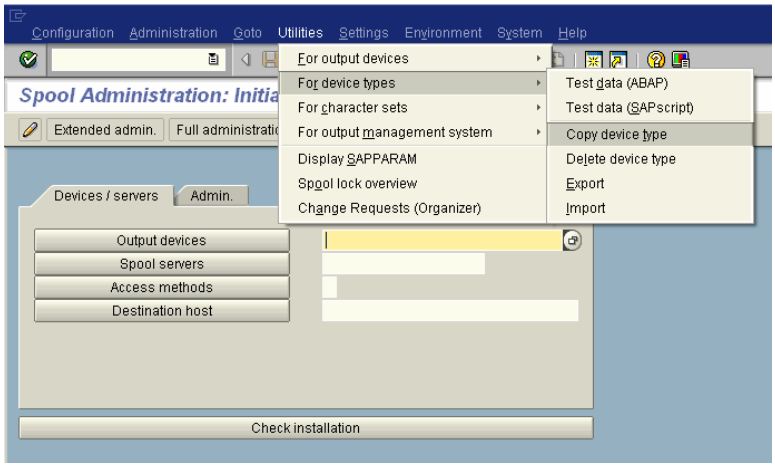


Figure 1: Invoke „Copy Device Type“

3. The dialog `Copy device type` appears. Enter (or select) the device type `“SWIN* (Rel.4.x/SAPlpd 4.09+ ONLY!)”`. This enables you to use all printers installed within the windows printer manager.

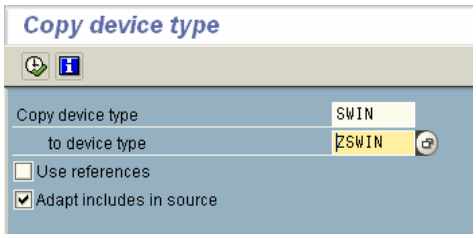


Figure 2: Copy Device Type

Parameter	Description
Copy device type	For Windows environments you choose `SWIN* (Rel. 4x/SAPlpd 4.09+ ONLY)`. With this selection you can use all printers, which have an appropriate Windows printer driver installed. We recommend the device type `SWIN` because it contains all SAP standard bar code definitions. (the device type `SAPWIN` contains only the barcode type 2of5 IL per se). If you choose SAPWIN, the missing bar code Print controls must be added in an extra step.
To device type	The name of the copied device type. In SAP the custom namespace start with Y or Z - so choose `ZSWIN` as for the name of the new, customized device type. No special characters or spaces!
Use references	Do not select this option! Trouble shooting will be hard if you select it.
Adapt includes in source	Keep this option selected

Table 3: Copy Device Type

4. Confirm your input with `Execute(F8)` and the following dialog („`Generate device type`“) with `Yes`
5. SAP R/3 opens the object directory in the create mode

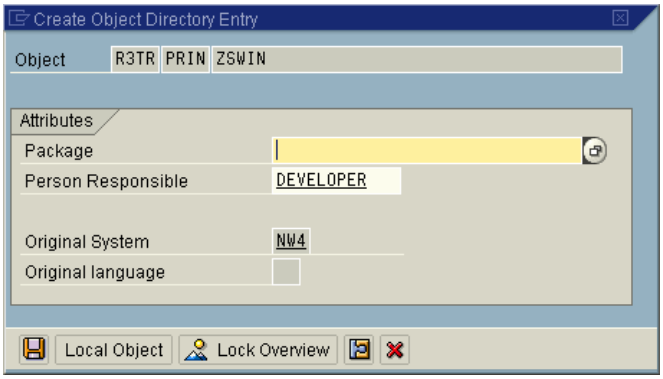


Figure 3: Create Object Directory Entry

6. In order to create o local object select `Local Object`, otherwise you need to specify a package. Please consider that local objects will not be transported.
7. SAP lists the copied items
8. Hit the back button  until you are in the main menu.

6.2 Next step

Assign the newly copied device type to output devices – please refer to the next chapter.

7 Assign the Device Type to a Printer

To use *TBarCode/SAPwin* it is required to assign the device type copy created in chapter 6 (Create a Device Type Copy) to an output device.

> ➢ Assigning the correct device type to the printer is a must. Without correct device type settings barcode printing will not work.

7.1 Output Device Settings

The dialog window to assign the new device type to a printer is accessible via transaction SPAD or is invoked by

`SAP Menu ► Tools ► CCMS ► Spool ► Spool Administration`.

The dialog `Spool Administration: Initial Screen` is opened. Choose the tab `Devices / servers` and click `Output devices`.

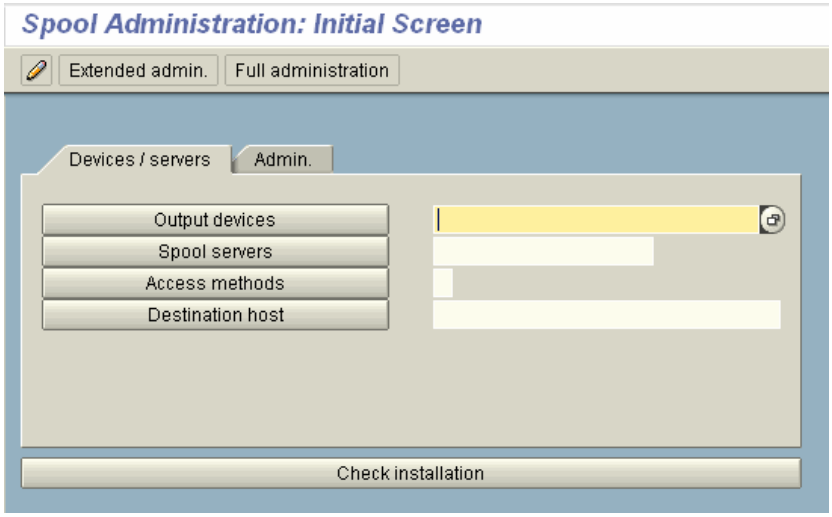


Figure 4: Spool Administration: Initial Screen

Afterwards, a list of all available output devices is displayed. Information about device, device type and server is available. Double-Click the printer you want to use for bar-coding.

In the upcoming dialog `Spooler Admin: Output Device` shown below you can change into edit-mode by clicking  . Use the tab `DeviceAttributes` to change the device type and adjust the following values:

7.1.1 Device Attributes

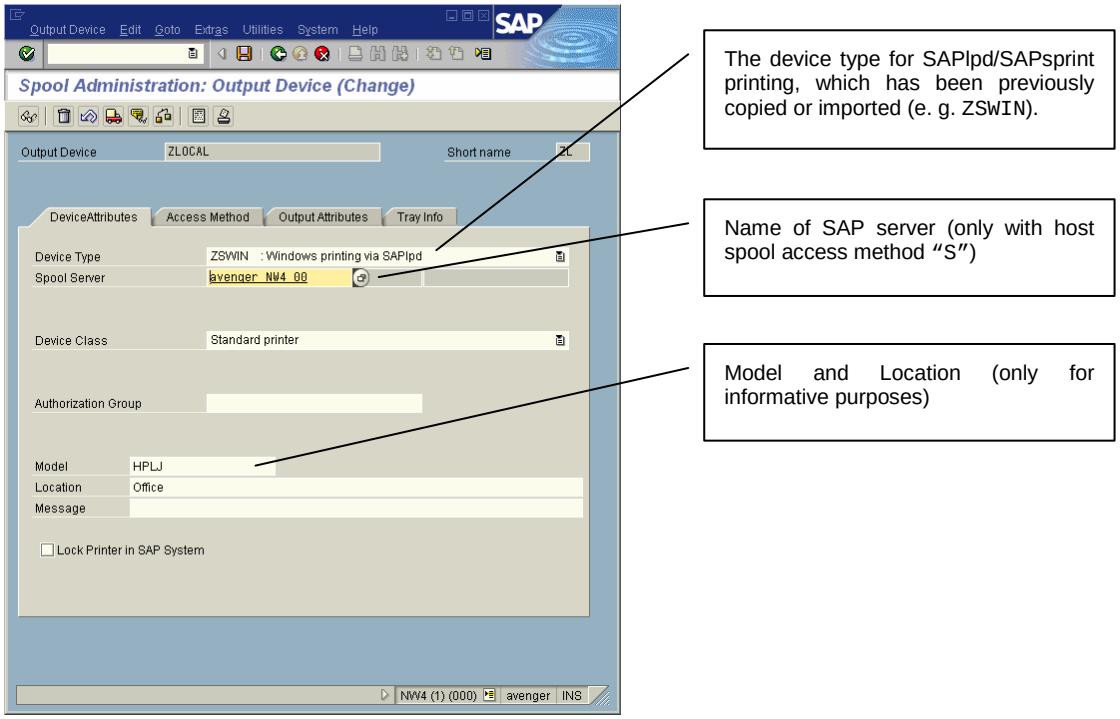


Figure 5: Spool Administration: Change Output Device

Parameter	Description
Device Type	For the Device Type enter/select the name of the copied device type E.g. ZSWIN, refer to chapter 6 (Create a Device Type).
Spool server	Name of SAP Spool-Server. This field is only available when using hostspool access method "S".
Device Class	Do not change the standard settings.
Authorization Group	Not relevant for bar-coding
Model Location Message	Not relevant for bar-coding

Table 4: Output Device Field Values

7.1.2 Hostspool-Access method

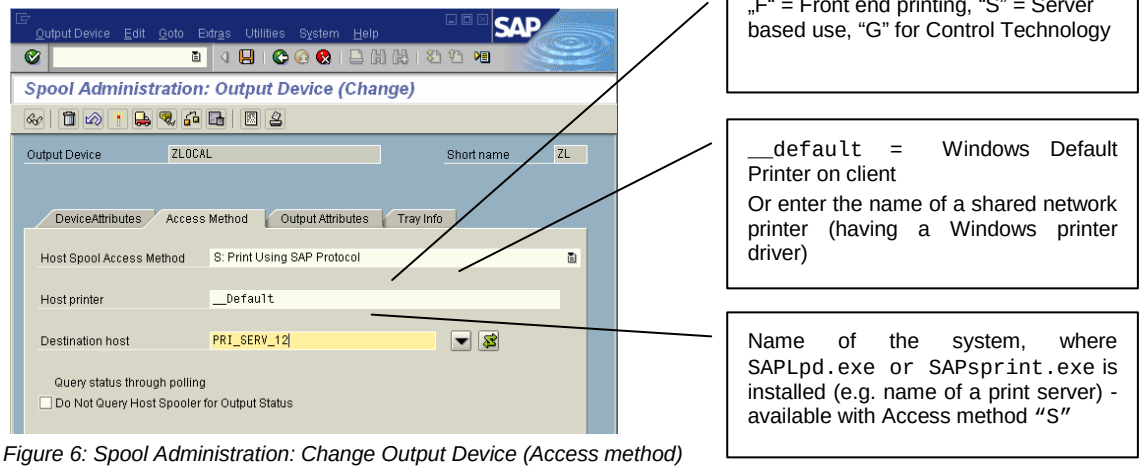


Figure 6: Spool Administration: Change Output Device (Access method)

In the tab `HostSpoolAccMethod` adjust the following values:

Parameter	Description
Host spool access method	For the Access method enter `S, F, or G` ▪ Use access method `S` if you set up a print-server with `SAPlpd` or `SAPsprint` ▪ Use access method `F` if you plan to install TBarCode/SAPwin on each client ▪ Use access method `G` if you want to use the new Control Technology for front end printing (install TBarCode/SAPwin into the SAPWIN.dll directory).
Host printer	▪ Enter `__DEFAULT` if you want to use the Windows Default Printer on the SAP client. ▪ Or enter the name of a shared network printer (having a Windows printer driver)
Destination Host	Is required for Access Method `"S"` Name of the system (e.g. Print server or Spool server) , where `SAPsprint.exe` or `SAPLpd.exe` is running (e.g. name of a print server). With F1 you can list examples of possible entries.

Table 5: Output Device Host Spool Access Method

Save all your settings with  . Go back to the main menu using  .

7.2 Next step

After you have saved the settings get back to the main menu and adjust the required printer barcodes. Please refer to the next chapter.

8 Define Printer Barcodes

Printer bar codes are defined within SAP® R/3® to make a connection between Print-Controls (they are device type dependent) and the system-barcodes (device type independent).

The next chapters are using the device type copy `ZSWIN` (refer to chapter 6 - Create a Device Type Copy) to demonstrate printer-barcode maintenance.

8.1 Adding new Printer Barcodes

Invoke transaction SE73 or choose
`SAP Menu ► Tools ► SAPscript ► Administration ► Font`
to open the dialog `SAPscript Font Maintenance: Initial Screen`

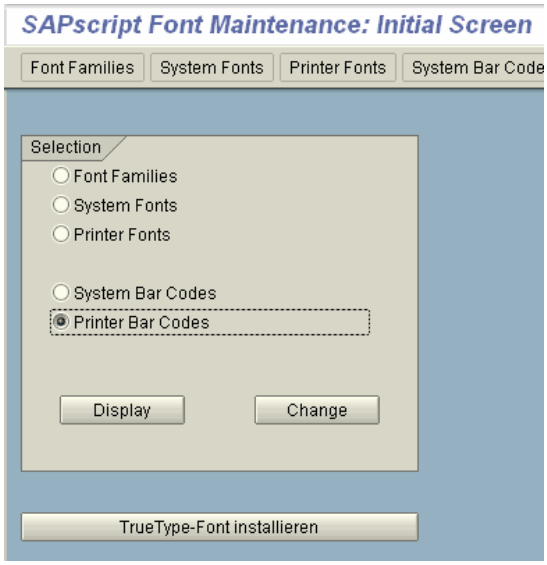


Figure 7: SAPscript Font Maintenance: Initial Screen

Select the option `Printer Barcodes` and click `Change`.

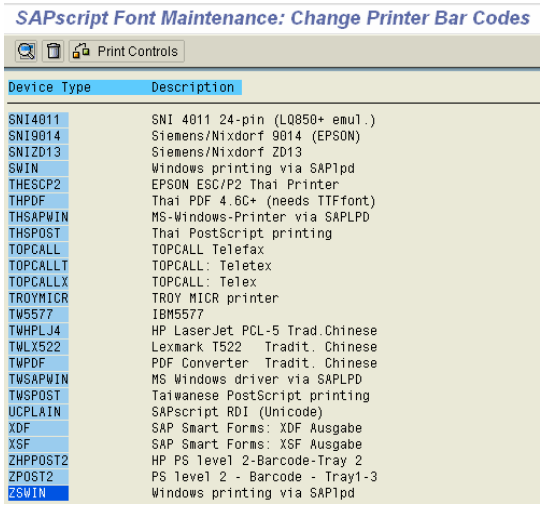


Figure 8: SAPscript Font Maintenance: Device Types

Choose your device type created in chapter 6 (Create a Device Type Copy). Double click it or press  .

A list of printer-barcodes available for the device type is displayed.

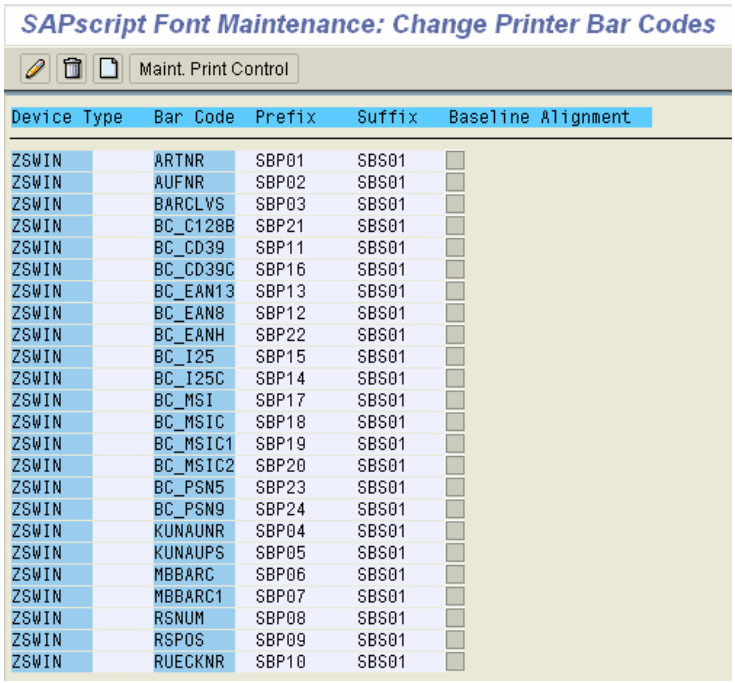


Figure 9: SAPscript Font Maintenance: Change Printer Barcodes

Choose `Create`  (F5) to define a new printer barcode.

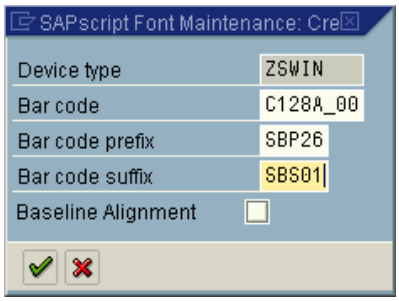


Figure 10: Assign Print-Control Prefix / Suffix

In this dialog you create a new printer-barcode. It contains a barcode-prefix and a barcode-suffix. If you decide to choose a predefined barcode Print-Control select the using the dropdown-menu.

Enter the following information:

Parameter	Description
Barcode	The name of the system barcode that you want to print. If the desired barcode is not listed here, you have to create a new system-barcode (see chapter 12.2.1 New System Barcode)
Barcode prefix	The name of the prefix Print-Control in the form SBP<nn>. <nn> is an ID number. You can select any identification number you want. The Print-Control name must be unique among the Print-Controls that have been defined for the device type. Example: SBP25
Barcode suffix	The name of the suffix Print-Control in the form SBS<nn>. <nn> is an ID number. You can select any identification number you want. The Print-Control name must be unique among the Print-Controls that have been defined for the device type.

	Example: SBS25 Usually only one suffix (named SBS01) is defined (for all prefixes in common). This is possible because the suffix does not depend on the barcode symbology and it is equal for all prefixes only.
Baseline alignment	Not used by actual SAP Releases

Table 6: Printer-Barcodes Field Values

8.1.1 Adding a new Printer-Barcode

If prefix and suffix does not exist within SAP the system opens a confirmation dialog. Continue by pressing Enter to add the Print-Controls.

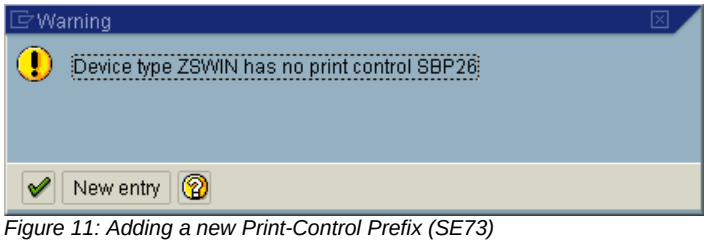


Figure 11: Adding a new Print-Control Prefix (SE73)

- If Print-Controls are added via the Font Maintenance SE73 the system always assigns them the standard-setting „Variant 1“ (Direct). But in order to use them for bar-coding purposes Variant 5 (extended) is required. It is a must to change Variant 1 into Variant 5 (extended). This can be done only within SPAD (refer to 21.4.4 - Wrong Variant of Print-Control).

After adding the prefix and the suffix modify them to meet your needs. Refer to chapter 8.2 (Modifying Print-Controls).

Confirm your settings with OK and save your settings. Use  to go back to the main menu.

- After you created a new entry for a Print-Control it may be necessary that you edit the Print-Control in order to save it in the device type. Sometime it will only be saved by SAP after it has been detected as “dirty” (means edited). E.g. enter a space and delete it.

8.2 Modifying Print-Controls

- For more detailed information regarding Print-Controls (parameters, syntax…) please refer to chapter 12 (Print-Controls). In this chapter we show only how you can change them.

Invoke Transaction SE73 or use
SAP Menu ► Tools ► CCMS ► Print ► Font Maintenance
to open SAPscript Font Maintenance: Initial Screen

In this dialog it is possible to adjust the Printer Barcodes for a specific device type.

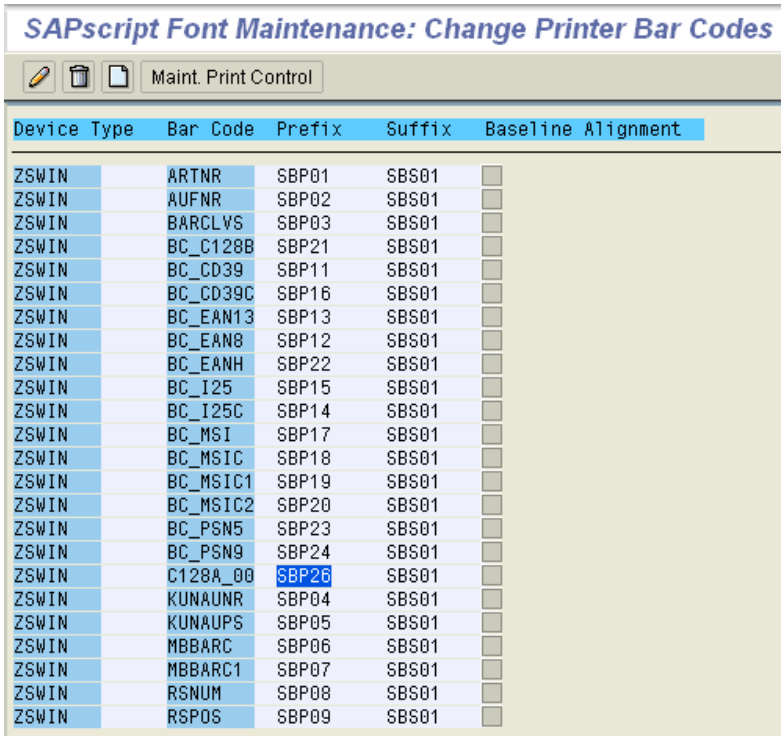


Figure 12: Print-control Maintenance

Make sure to activate the “change” mode before editing a Print-Control.

The select the Print-Control prefix of the barcode you want to change and press `Maint. Print-Control`.

The fields `Hexadecimal switch` and `Control Char. Sequ.` are now editable and you can adapt the barcode settings to your requirements. We recommend to enter the control sequences in hexadecimal code form (ASCII) - be sure to mark the `Hex switch` with an „X“ in this case.

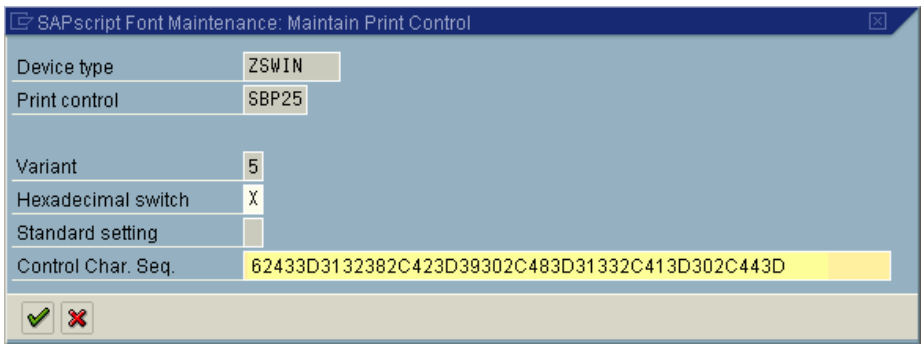


Figure 13: Print-control Maintenance - Detail

> ➢ Converting Print-Controls from ASCII into hex codes is supported by the TEC-IT Software *Barcode Studio* (refer to 12.4 Print-Controls with „Barcode Studio“).

Confirm your changes and save your settings before you go back to the main menu.

> ➢ For adjusting the Print-Control suffix (`SBS01`) refer to chapter 12 (Print-Controls).

9 Test Barcode Printing

It is strongly recommended to perform a barcode printing test after all previous installation steps are completed.

For this purpose SAP-systems are shipped with a predefined test document. It prints the most important barcodes (see 17- Predefined System-Barcodes).

To test barcode printing, perform the following steps:

1. On the `Spool Administration: Initial Screen` (transaction SPAD) choose `Utilities ► For device types ►Test data (SAPscript).`
2. Print the predefined document `SAPSCRIPT-BARCODETEST`, specifying `ST` as the document ID and `DE` or `EN` as the language.
   If you want to test rotated barcode printing, choose `SAPSCRIPT-BARCODETEST2`.

➢ The test document is usually only available in client 000.

10 Obtain a License

10.1 Product Variants

TBarCode/SAPwin can be licensed in two variants. The difference between these variants is the number of supported barcode symbologies:

Product variant	Description
TBarCode/SAPwin 1D	Supports linear barcodes like Code128, Code39, EAN, UPC, EAN128, 2 of 5 Interleaved, … No 2D-Symbologies are supported
TBarCode/SAPwin 2D	Supports linear barcodes and the following 2D barcodes with high data-density: ▪ PDF417 ▪ PDF417 Truncated ▪ Data Matrix ▪ MaxiCode ▪ QR-Code ▪ Codablock-F

Table 7: Product Variants

> ➢ The installation files (binary files) of the 1D and 2D version are always the same (only one setup program), but license key to unlock the product is different.

10.2 License Key and License Types

TBarCode/SAPwin can be used immediately after setup. As long as *TBarCode/SAPwin* stays in unlicensed mode an additional horizontal bar or a small text mark (“Demo”) will be printed over the barcode. Usually this demo-restriction does not affect the readability of the code for evaluation purposes.

A valid license removes this restriction. There are three possible license modes to choose from:

License Mode	Description
Single	This license gives you the right to use *TBarCode/SAPwin* on exactly one computer (one client) and print to local printers. It is not permitted to use this license on a server or for network printers. Note: TEC-IT needs the System-ID of the target machine for this license (refer to 21.26- How to retrieve the System-ID?).
Site	This license gives you the right to use *TBarCode/SAPwin* at exactly one site within your company. Installation is allowed on as many clients as required within this site (also on a server and with network printers). A site is defined as a legal unit of an organization operating under one postal address.
World or Enterprise (Multi-Site)	This license gives you the right to use *TBarCode/SAPwin* worldwide at all sites of your company (no restrictions in the number of sites or clients).

Table 8: License Variants

> ➢ Redistributing *TBarCode/SAPwin* is generally NOT allowed – regardless of the license you purchased.
>
> ➢ The unlicensed product may only be used for test purposes. Use in production environments is not allowed.

10.3 License File Barcode.ini

After you ordered a license, you receive a license key, which has to be copied (entered) into the *barcode.ini* file.

Barcode.ini is located in the same directory as the Barcode.dll (the installation directory of *TBarCode/SAPwin*).

If you want to use the product on more clients (e.g. when using a Site or World License), you have to copy the licensed *barcode.ini* file to each system (client).

Relevant for SAPlpd: You have to restart SAPlpd to reload *TBarCode/SAPwin*. The license file is only read once at startup.

- The demo restriction (horizontal line or small text “Demo”) disappears when applying a valid license file.

11 Using Barcodes in SAP

A short introduction about barcode printing concepts of SAP R/3 is available in chapter 12 (Print-Controls).

11.1 SAPscript

In SAPscript (SE71) you can choose between two methods for barcode printing.

11.1.1 Using Character Formats for Bar-coding (recommended method)

A character format is defined using a system-barcode. Text marked with this character format is subsequently printed as barcode.

- For each system-barcode it is required to define a printer-barcode. This printer-barcode encapsulates a Print-Control prefix and suffix (see font maintenance SE73). The prefix and the suffix are triggering barcode generation when printing the text on the output device.
- When using the device type SWIN (or a copy of it) most of the barcode formats are already defined per default.

In the following example the character format B3 is used to print a Code 3of9:

Figure 14: SAPscript and Barcode-printing

- The character format B3 is defined to use system-barcode BC_CD39.
- BC_CD39 is also defined as printer-barcode using prefix SBP11 and suffix SBS01.
- The prefix SBP11 contains the control sequence for barcode parameters (barcode-type, size, check digit…). The prefix can be adjusted to meet your bar-coding needs (see 8.2-Modifying Print-Controls).

.

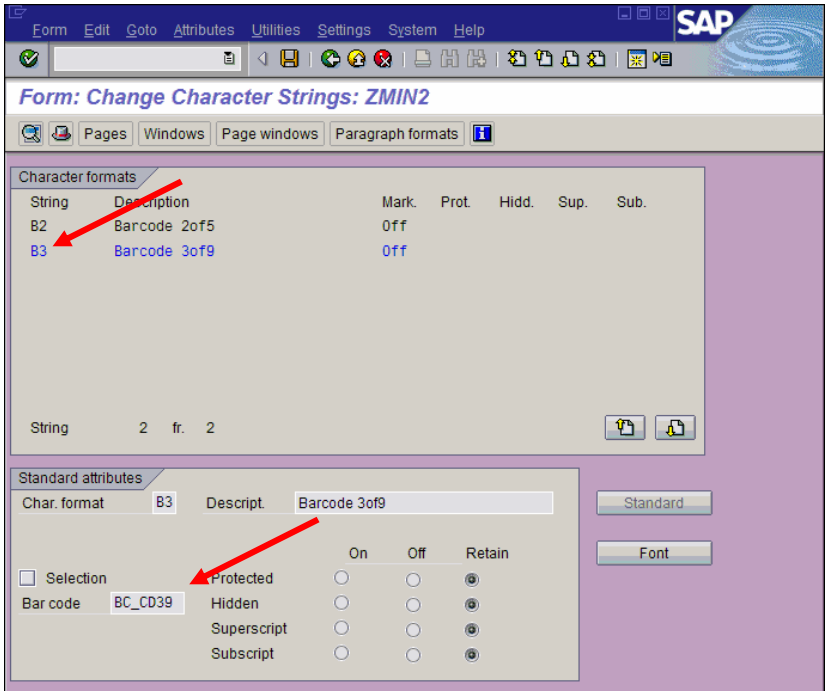


Figure 15: Character Format Definition

11.1.2 Direct use of Barcode-Print-Controls in SAPscript

> ➢ This method is not recommended. Use character formats instead (see above).

In SAPscript the barcode-related Print-Controls (prefix and suffix) are specified directly.

```
* TEXT contains the barcode data:

/E LINE
/: PRINT-CONTROL SBP22
=  &TEXT&
/: PRINT-CONTROL SBS01
/
```

> ➢ To avoid unwanted space or CR/LF characters when using a variable the & is necessary.
>
> ➢ Note, that you need a text line (or space character) before the barcode pint-control prefix; otherwise the list processor of SAP can't encode the barcode data correctly.

Sample:

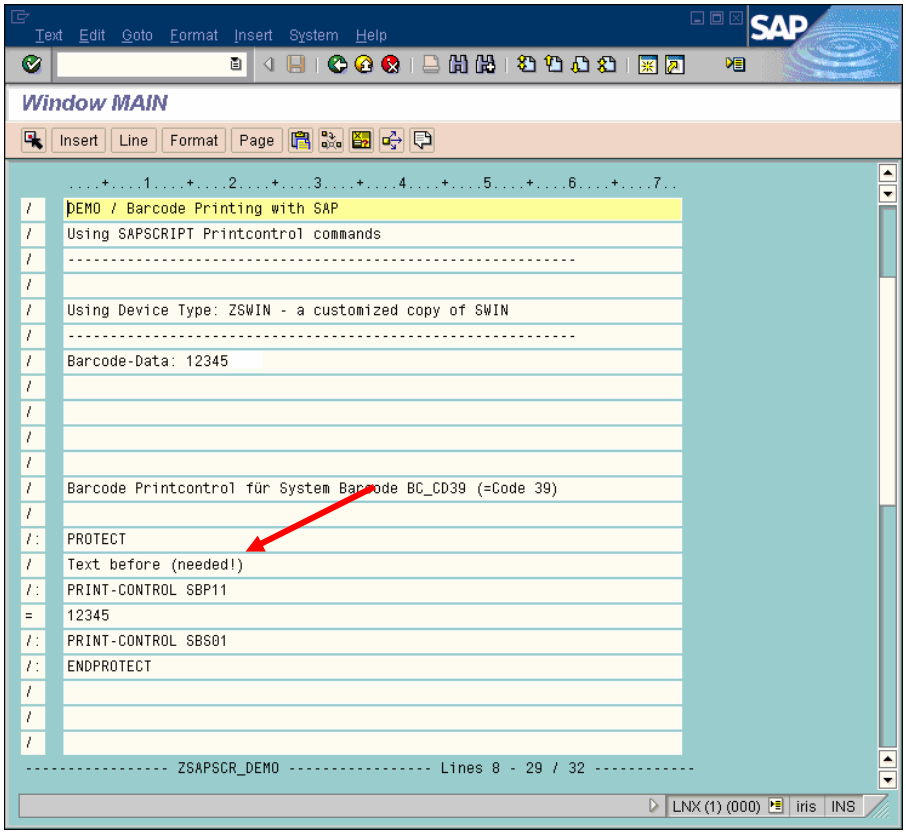


Figure 16: Sample SAPscript

11.2 SmartForms

11.2.1 Using Styles for Bar-coding

When using SmartForms Barcodes are defined using a so-called STYLE:

- In the output options of the form you select the STYLE applied to the whole form
- In the STYLE a system barcode is specified for character format B1.
- In the form you select the character format B1
- The text data inside the character format B1 will be printed as barcode

> ➢ You need to have keywords "PROTECT" and "ENDPROTECT" (beginning with "/:" in text mode) placed around the barcode character format.

Sample (the data to be encoded as barcode is 0123456789):

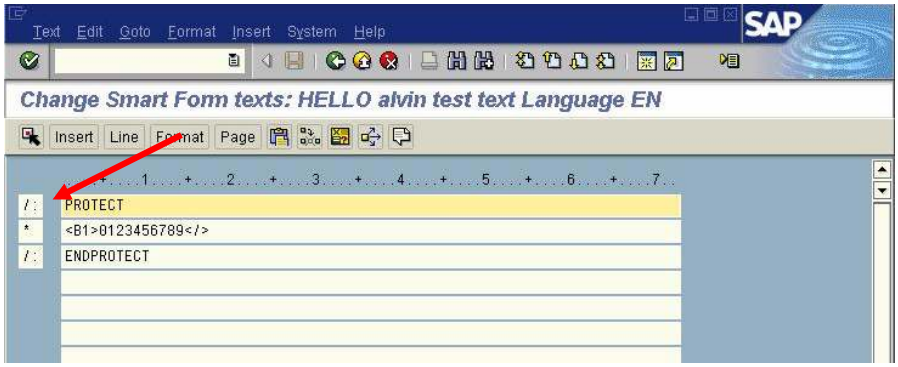


Figure 17: SmartForms Barcode Printing - Editor 1

Open the text editor with this button:

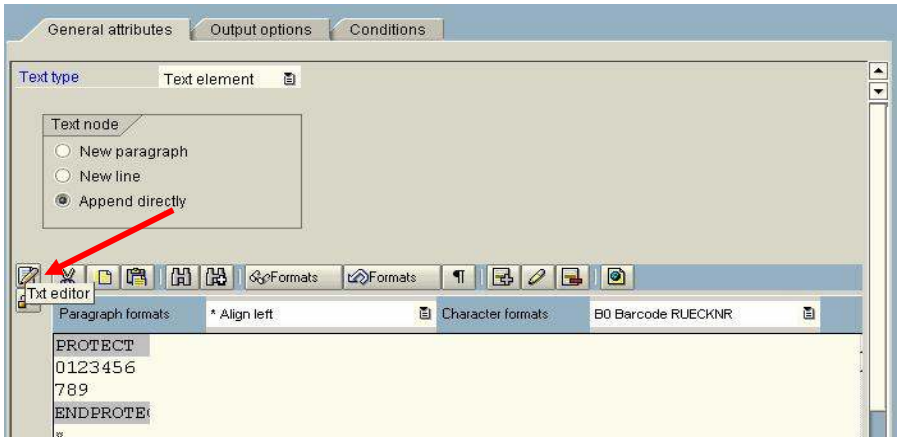


Figure 18: SmartForms Barcode Printing - Editor 2

11.2.2 Style definition

Choose a style, which is used for your SmartForms document.

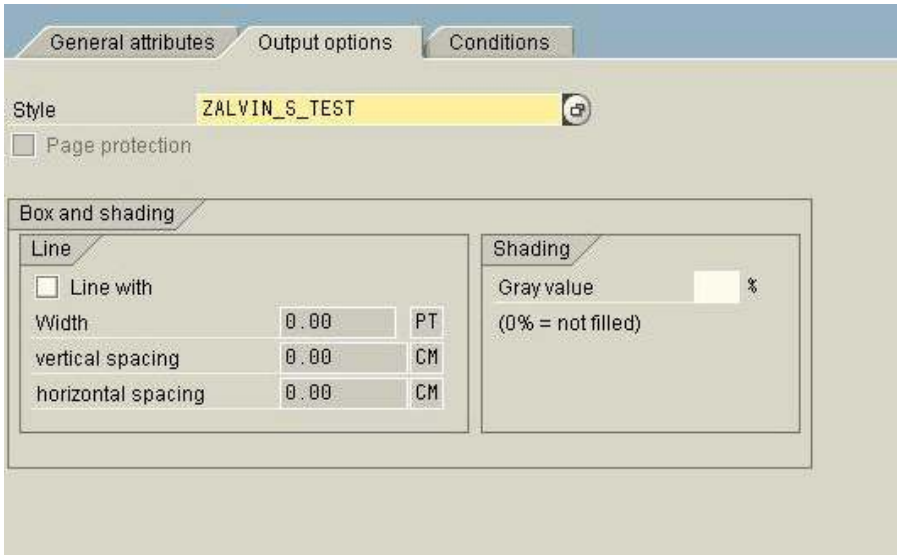


Figure 19: SmartForms Style

In the style definition you need to specify the system barcode used for printing the character format.

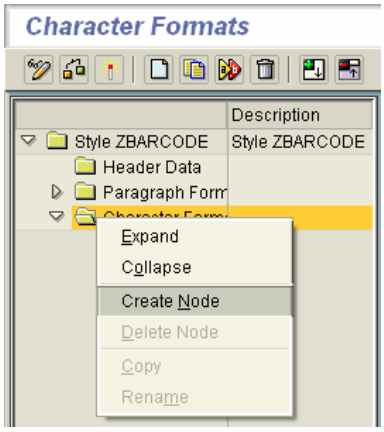


Abb. 20: Style Definition – new Character Format

Regardless if you use SAPscript or SmartForms, add a new style node below the Character Format node (right click).

Enter two characters for the name and choose a bar code type – in our sample we select Code-39 but you can use any type.

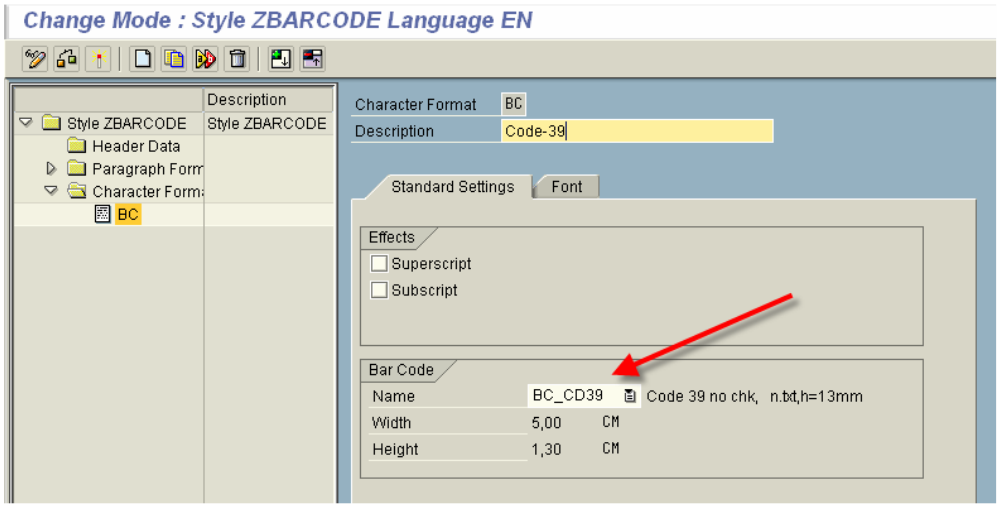


Abb. 21: Style Definition – Bar Code Character Format

11.3 ABAP

11.3.1 Sample ABAP Program

```
DATA: V_BARCODE(20).
NEW-PAGE NO-HEADING PRINT ON LINE-SIZE 80.

* Build test string:

DO 2 TIMES.
   CONCATENATE '1234567890' V_BARCODE INTO V_BARCODE.
ENDDO.

FORMAT COLOR OFF INTENSIFIED OFF.

* If the barcode is the first element on the page, the following “write” statement
* is needed (otherwise you get a date in the first Print-Control):

WRITE: /.

* Begin of barcode
* Print-Control prefix (from the ZSWIN device type)
* The Print-Control contains the barcode parameters (type, size...)

PRINT-CONTROL FUNCTION 'SBP22'.

* Barcode data content (NO-GAP is important to avoid unwanted characters or CR/LF)

WRITE: V_BARCODE NO-GAP.

* End of barcode
* Print-Control suffix (from the ZSWIN device type)

PRINT-CONTROL FUNCTION 'SBS01'.

* This WRITE statement prevents inserting of Carriage Return / Line Feed into barcode data

WRITE: /.
```

➢ "`Format Color off Intensified off`" is necessary on some SAP systems as the list processor otherwise inserts Print-Controls by its own (resulting in disturbed barcode output).

12 Print-Controls

12.1 Introduction Print-Control Usage

SAP uses the term „Print-Control“ for control character sequences, which are used to adjust various out device features (like bar-coding).

SAP R/3 is using a 3-tier system for defining Print-Controls::

3. System-Barcodes
4. Printer-Barcodes
5. Print-controls

12.1.1 System-Barcodes

A system-barcode is a system-wide (device-independent) definition of an available barcode type. Only if a system-barcode is defined you can use it in SAPscript or in style definitions.

System-barcodes are storing definitions like barcode symbology, size and alignment. But these settings are used only for controlling cursor and tabulator-positions during printing. Output of the barcode symbol itself is NOT influenced by a system-barcode (here the printer-barcode with the underlying Print-Controls is of relevance).

During print-time of a form or report the definition of a system-barcode is not needed. Instead of the system barcode the corresponding printer-barcode is used.

12.1.2 Printer-Barcodes

A printer barcode defines the device specific control sequence for generating a previously defined system-barcode. In other words: For each system-barcode a printer-barcode must be defined per output device type.

Actual barcode output is controlled by Print-Controls. Each printer barcode consists of two such control sequences: the Print-Control prefix and the Print-Control suffix.

> ➢ Barcode printing will not work if printer-barcode definitions are missing.

12.1.3 Print-Controls

A Print-Control represents the lowest definition level. It contains device-specific (in our case: *TBarCode/SAPwin* specific) control sequences which are triggering barcode output.

It is strongly recommended to enter Print-Controls in hex codes (instead of ASCII) to ensure correct barcode printing. Please refer to 13 (Barcode Print-Control Reference)

12.2 Add new Print-Controls

> ➢ If you want to add a new barcode you must add a system-barcode as well as a printer-barcode.

If you only want to edit existing Print-Controls read ahead in chapter 8.2- Modifying Print-Controls.

12.2.1 New System Barcode

If you want to use a barcode type, which is not already defined in the system, you have to define a new system barcode first. Run transaction SE73 or follow the path

1. Utilities ► SAPscript ► Administration ► Font
2. Select System barcodes and then Change.
3. Choose Create(F5) to define a new barcode

> ➢ SAP systems starting with Release 4.7 need to know which barcode technology should be used. In the upcoming dialog choose „old“ („conventional system-barcode“). Unfortunately barcode integration into SAPlpd or SAPsprint is not possible with the “newer” technology.

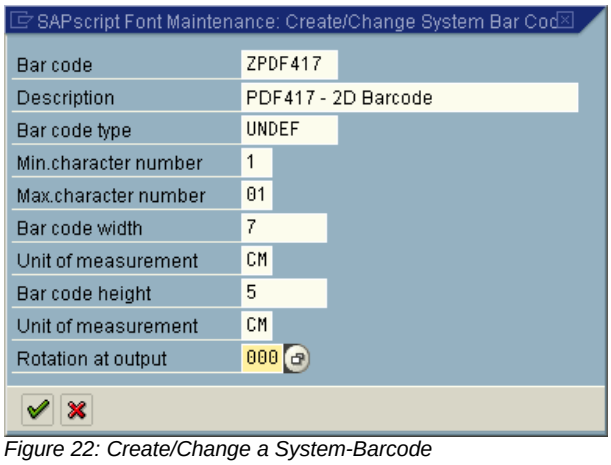


Figure 22: Create/Change a System-Barcode

Enter the following information:

Parameter	Description
Barcode	Enter the name of your new barcode. The name must begin with a Z to avoid conflicts between your barcodes and the SAP system barcodes.
Description	Just for informational purposes
Barcode type	This selection is only for informational use, you can choose UNDEF.
Min. character number	Minimum number of characters for barcode (choose 1)
Max. character number	Maximum number of characters for barcode (choose highest possible value)
Barcode width	With of barcode. This value is only relevant for cursor and tab placement but not for the real size of the barcode. The effective size of the barcode is adjusted in the Printer barcode by Print-Control parameters.
Unit of measurement	Unit for width of barcode
Barcode height	Height of barcode. This value is only relevant for cursor and tab placement but not for the real size of the barcode. The effective size of the barcode is adjusted in the Printer barcode by Print-Control parameters.
Unit of measurement	Unit of height of barcode
Rotation at output	Barcode rotation (effective rotation is adjusted in the Printer barcodes!).

Table 9: System Barcode Field Values

Confirm the upcoming dialog with OK:

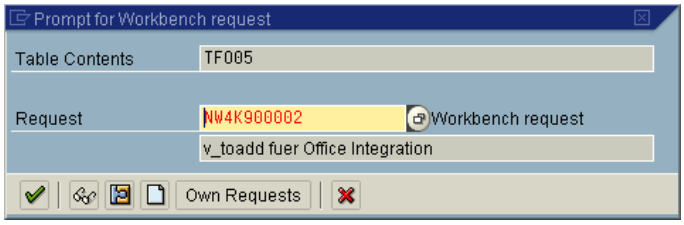


Figure 23: Confirmation Dialog: Prompt for Workbench request

> ➢ Please do not forget to define a corresponding printer-barcode for a system-barcode!

12.2.2 New Printer Barcode

See chapter 8.1(Adding new Printer Barcodes).

12.3 Modify existing Print-Controls

Print-control maintenance is described in chapter 8.2(Modifying Print-Controls)

The Print-Control parameters are available in chapter 13 (Barcode Print-Control Reference).

12.4 Print-Controls with „Barcode Studio“

You can use TEC-IT's software tool *Barcode Studio* to generate the Print-Controls required for SAP. Download it from http://www.tec-it.com/download/

Set the barcode parameters as required graphically and then open the Print-Control window (Menu `View`) to see the corresponding SAP parameters (available as hex codes and as ASCII string).

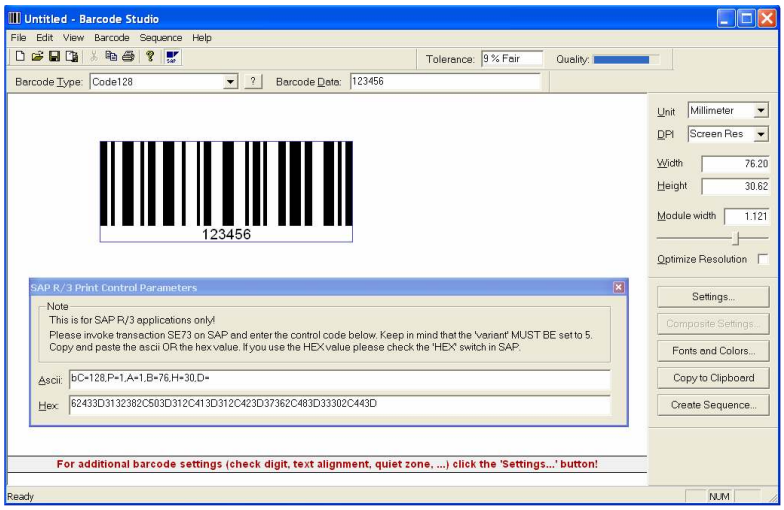


Figure 24: Barcode Studio

13 Barcode Print-Control Reference

Usually a Print-control is used for controlling device specific actions. In the case of *TBarCode/SAPwin* it defines barcode specific features. Each Print-Control consists of a prefix and a suffix. Within the Print-Controls you can use special parameters (“printer commands”) to control the output of *TBarCode/SAPwin*.

13.1 Syntax and Structure of Print-Controls

In general a Barcode Print-Control consists of a prefix and a suffix. The prefix controls the barcode properties; the suffix terminates the barcode data. That means that different barcode types require also different prefixes. The suffix however can be equal for all barcode types (valid for SWIN resp. SAPWIN device types).

13.1.1 Naming convention

Please consider the naming convention if you add a new Barcode Print-Control. Prefixes start with SBP and suffixes with SBS. Thereafter follows a two-digit number, which must be unique for each device type.

Example: SBP25 (Prefix) and SBS01 (Suffix)

13.1.2 Print-Control Prefix

A Print-Control prefix with the barcode parameters consist of the following parts: „ bPARAMD= “

Value	Description
b	Start character (Hex code: 62)
PARAM	Barcode parameters Multiple parameters must be separated by a comma (Hex code = 2C)
D=	End of the control sequence MUST be specified at the end of the sequence (Hex code: 44 3D)

Table 10: Syntax of Print-Control Prefix/Suffix

Sample:

```
bC=E128,B=70,H=30,D=
```

We recommend entering all parameters as hex codes. Use the conversion table in chapter 16 (Hex – ASCII Conversion Table). For converting the ASCII representation into hex-codes. Sample (containing the same data as above):

```
62433D453132382C424337302C483D33302C443D
```

- Print-controls start and end with an ASCII escape character (hex 1B). These escape characters are added by SAP automatically to the Print-Control prefix and suffix, so don’t encode them directly – only make sure the Print-Control is marked as “Extended” (within transaction SPAD).

13.1.3 Print-Control-Suffix

Das Print-Control-Suffix is defined as follows (Release dependent):

SAP-Release	Content
4.6	Empty Print-Control with Variant 5 (`Extended`)
4.7	Print-Control with Hex encoded value `1B` and Variant 1 (`Direct`)

Table 11: Syntax Print-Control-Suffix

> ➢ Recommended procedure: add just one Print-Control suffix for all barcodes. Usually this suffix is named `SBS01`.

13.2 Print-Control Parameters

The following commands and parameters can be used by *TBarCode/SAPwin* to control the barcode characteristics. You can find the Hex codes to each character in the Hex – ASCII Table.

13.2.1 General Parameters

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
C	Code selection (barcode symbology)	C=128	43 3D 31 32 38	Code 128
		C=128A	43 3D 31 32 38 41	Code 128 Character Set A
		C=128B	43 3D 31 32 38 42	Code 128 (Subset B)
		C=128B	43 3D 31 32 38 42	Code 128 Character Set B
		C=128C	43 3D 31 32 38 43	Code 128 Character Set C
		C=25I	43 3D 32 35 49	Code 2 of 5 Industrial
		C=25L	43 3D 32 35 4C	Code 2 of 5 Interleaved
		C=25M	43 3D 32 35 4D	Code 2 of 5 Matrix
		C=25A	43 3D 32 35 41	Code 2 of 5 IATA
		C=39	43 3D 33 39	Code 39 (Code 3 of 9)
		C=39E	43 3D 33 39 45	Code 39 Extended (Full ASCII)
		C=93	43 3D 39 33	Code 93
		C=93E	43 3D 39 33 45	Code 93 Extended (Full ASCII)
		C=APC37	43 3D 41 50 43 33 37	Australia Post 37-CUST
		C=APC52	43 3D 41 50 43 35 32	Australia Post 52-CUST
		C=APC67	43 3D 41 50 43 36 37	Australia Post 67-CUST
		C=APCRP	43 3D 41 50 43 52 50	Australia Post REPLY Paid
		C=APCRD	43 3D 41 50 43 52 44	Australia Post Redirect
		C=APCRT	43 3D 41 50 43 52 54	Australia Post Routing
		C=CBF	43 3D 43 42 46	Codablock F[1]
		C=CODA	43 3D 43 4F 44 41	Codabar
		C=DMX	43 3D 44 4D 58	Data Matrix[2]
		C=DPI	43 3D 44 50 49	Deutsche Post Identcode
		C=DPL	43 3D 44 50 4C	Deutsche Post Leitcode
		C=E128	43 3D 45 31 32 38	UCC/EAN128
		C=E13	43 3D 45 31 33	EAN13
		C=E13+2	43 3D 45 31 33 2B 32	EAN13 + 2 digits add on

[1] needs 2D license
[2] needs 2D license

		C=E13+5	43 3D 45 31 33 2B 35	EAN13 + 5 digits add on
		C=E14	43 3D 45 31 34	EAN-14
		C=E8	43 3D 45 38	EAN8
		C=E8+2	43 3D 45 38 2B 32	EAN8 + 2 digits add on
		C=E8+5	43 3D 45 38 2B 35	EAN8 + 5 digits add on
		C=MPDF	43 3D 4D 50 44 46	MicroPDF417[3]
		C=MSI	43 3D 4D 53 49	MSI (implemented, but not tested)
		C=MXC	43 3D 4D 58 43	MaxiCode[4]
		C=OMR C=FLM	43 3D 4F 4D 52 43 3D 46 4C 4D	OMR-Code Flattermarken
		C=PDF	43 3D 50 44 46	PDF417[5]
		C=PDT	43 3D 50 44 54	PDF417 Truncated[6]
		C=PH1	43 3D 50 48 31	Pharmacode 1-Track
		C=PH2	43 3D 50 48 32	Pharmacode 2-Track
		C=PSN5	43 3D 50 53 4E 35	USPS Postnet 5 digits
		C=PSN9	43 3D 50 53 4E 39	USPS Postnet 9 digits
		C=PSN11	43 3D 50 53 4E 31 31	USPS Postnet 11 digits
		C=QRC	43 3D 51 52 43	QR-Code[7]
		C=R14 C=R	43 3D 52 31 34 43 3D 52	RSS-14
		C=RL	43 3D 52 4C	RSS 14 Limited
		C=RT	43 3D 52 54	RSS 14 Truncated
		C=RS	43 3D 52 53	RSS 14 Stacked[8]
		C=RO	43 3D 52 4F	RSS 14 Stacked Omni[9]
		C=RE	43 3D 52 45	RSS Expanded
		C=RX	43 3D 52 58	RSS Expanded Stacked[10]
		C=RM	43 3D 52 4D	Royal Mail 4-State Cust.
		C=SSCC18	43 3D 53 53 43 43 31 38	Serial Shipping Container Code (AI0)
		C=UA	43 3D 55 41	UPC-A
		C=UA+2	43 3D 55 41 2B 32	UPC-A + 2 digits add on
		C=UA+5	43 3D 55 41 2B 35	UPC-A + 5 digits add on
		C=UC1		UPC-D1 (not supported)
		C=UC2		UPC-D2 (not supported)
		C=UC3		UPC-D3 (not supported)
		C=UC4		UPC-D4 (not supported)
		C=UC5		UPC-D5 (not supported)
		C=UCE	43 3D 55 43 45	UPC-E
		C=UCE+2	43 3D 55 43 45 2B 32	UPC-E + 2 digits add on
		C=UCE+5	43 3D 55 43 45 2B 35	UPC-E + 5 digits add on
A	Human readable text	A=0	41 3D 30	A=0: no human readable text is printed
		A=1	41 3D 31	A=1: human readable text is

[3] needs 2D license
[4] needs 2D license
[5] needs 2D license
[6] needs 2D license
[7] needs 2D license
[8] needs 2D license
[9] needs 2D license
[10] needs 2D license

				printed
B	Width of barcode symbol [mms]	B=52	42 3D 35 32 0 = Hex. 30 1 = Hex. 31 2 = Hex. 32 3 = Hex. 33 4 = Hex. 34 5 = Hex. 35 6 = Hex. 36 7 = Hex. 37 8 = Hex. 38 9 = Hex. 39	B=0: if not specified (or zero) the width of the symbol is based on the module width. The module width can be adjusted through parameter M or through the bar/space widths (L1…L4, S1…S4). B<>0: width of the bar code in mms
D	Barcode data (digits / characters)	D=1234ABCD	44 3D + data	Data characters that are encoded in the barcode. Must be at the end of the Print-Control prefix.
E	Translate Escape Sequences (refer to Escape sequences & Control characters)	E=0	45 3D 30	No translation (e.g. "\t" = "\t")
		E=1	45 3D 31	Translation = On e.g. "\t" = TAB; "\x0d" = Hex 0D
FS	Font Size	FS=8	46 53 3D 38	Font-size in points used for the human readable text.
FW	Font Weight	FW=N FW=B	46 57 3D 4E 46 57 3D 42	Selects if the font is printed normal or bold.
FN	Font Name	FN=Courier New FN=Arial	46 4E 3D 43 6F 75 72 69 65 72 20 4E 65 77 46 4E 3D 41 72 69 61 6C	Font name, which is used for human readable text.
G	Width of the guard bar [in 1/1000 mm]	G=1000	47 3D + width	Width of the guard bar [0.001 mms]. G=0: if not defined or this value is zero no guard bar is drawn.
H	Height of the barcode symbol [mms]	H=25	48 3D + height Hex code of digits – refer to Control „B"	Height of the bar code in mms.
L1	Width of a space (gap) for single modules in the symbol (= the smallest element in the symbol). [ratio, pixel or mm]	L1=6 L1=-300	4C 31 3D + module width [Pixel] 4C 31 3D 2D + width in [0.001 mms]	If the value for L1 is less than 0, the width is given in mms [0.001 mms]. L=-300 → module width = 0.3 mm If the value for L1 is greater 0 and no symbol width is specified (B=0), this parameter controls the module width in [pixel]. Note: the final width depends on the printer resolution. If the symbol width was specified (B <> 0) the print ratio of the spaces adapts to the ratio of all L-values.
L2	Width of space (gap) for two modules in the symbol	L2=12 L2=-600	4C 32 3D + width	Analog to L1
L3	Width of space (gap) for three modules in the symbol	L3=18 L3=-900	4C 33 3D + width	Analog to L1
L4	Width of space (gap) for four	L4=24	4C 34 3D + width	Analog to L1

	modules in the symbol	L4=-1200		
M	Module width [in 1/1000 mm]	M=254	4D 3D + width	Module width (width of the narrow bar element). If the width B is undefined, the bar code width depends on the module width and the number of encoded characters. M=254 ... m.width = 0.254 mm
S1	Width of a single module for a bar in the symbol. [ratio, pixel, mm]	S1=6 S1=-300	53 31 3D + width in [Pixel] 53 31 3D 2D + width in [0.001 mms]	If the value of S1 is less 0, the width is given in mm [0.001 mms]. S1=-300 → module width = 0.3 mm If no symbol width is specified (B=0) this parameter controls the module width of the smallest bar element in [Pixel]. Note: the final width depends on the printer resolution. If the symbol width was specified (B <> 0) the print ratio of the bars adapts to the ratio of all S-values.
S2	Width of a bar that is two modules wide	S2=12 S2=-600	53 32 3D + width	Analog to S1
S3	Width of a bar that is three modules wide	S3=18 S3=-900	53 33 3D + width	Analog to S1
S4	Width of a bar that is four modules wide	S4=24 S4=-1200	53 34 3D + width	Analog to S1
P	Calculation of the check digit(s)	P=-1 P=0 P=1 P=2 P=3 P=4	50 3D 2D 31 50 3D 30 50 3D 31 …	P=-1 / P=1: standard check digit (that is specified for each barcode type) is calculated and printed P=0: no check digit calculation (data is printed as is). 2: for MSI – not supported 3: for MSI – not supported 4: for MSI – not supported
R	Rotation of the barcode symbol	R=0 R=90 R=180 R=270	52 3D 30 52 3D 39 30 52 3D 31 38 30 52 3D 32 37 30	Rotation of the barcode [degrees clockwise]
T	Text alignment of human readable text	T=0 T=1 T=2 T=3	543D30 543D31 543D32 543D33	0: Default 1: Left 2: Right 3: Center
W	Bar width reduction in percent, used for enhancing barcode quality when using inkjet printers	W=0 W=10	573D30 573D3130	W=0 is default (no reduction) W=10 reduces the bar width by 10% (based upon the width of the narrow bar), the printed size will be 90% of the nominal value.
X	Horizontal starting position of the barcode symbol [mms]	X=100	58 3 D + StartposX (Hex code of digits – refer to Control „B“)	Distance to the left side of the page [mms]. If not specified the actual cursor position will be used.
Y	Vertical starting position of the barcode symbol [mms]	Y=120	59 3D + StartposY (Hex code of digits – refer to Control „B“)	Distance to the upper side of the page [mms]. If not specified the actual cursor position will be used.

%	Place holder for FNC1	%=!	25 3D 21	The "!" is used as placeholder of FNC1 (used for separation of AI's with variable length, used with EAN128 only)

Table 12: General Barcode Print-Control Parameters

13.2.2 Parameters specific for Data Matrix

Special printer commands for Data Matrix				
DMF	Data Matrix-Format	DMF=0 DMF=1 DMF=2 DMF=3 DMF=4	44 4D 46 3D 30 44 4D 46 3D 31 44 4D 46 3D 32 …	Support of special industry standards DMF=0: Standard 1: UCC/EAN 2: Industry 3: Macro 05 4: Macro 06
DMR	Representation mode rectangle	DMR=0 DMR=1	44 4D 52 3D 30 44 4D 52 3D 31	Data Matrix Code is drawn square or rectangular DMR=0: square DMR=1: rectangular If the symbol size (DMS) is <> 0, DMR is ignored.
DMS	Symbol size	DMS=0 DMS=1 ... DMS=30	44 4D 53 3D 30 44 4D 53 3D 31 … 44 4D 53 3D 33 30	Size of the symbol in rows / columns: DMS=0: size is calculated automatically 1: 10 x 10 2: 12 x 12 … 30: 16 x 48 (refer to table below)
DMAF	Structured Append Mode: FileID	DMAF=123456	44 4D 41 46 3D + FileID	In Structured Append Mode multiple barcode symbols can be chained (make sure that your barcode reader supports this mode). The file ID must be identical in all symbols within the same chain.
DMAI	Structured Append Mode: index of the actual symbol	DMAI=1 DMAI=2 … DMAI=16	44 4D 41 49 3D 31 44 4D 41 49 3D 32 …	Index of a symbol in a chain using Structured Append.
DMAS	Structured Append Modus: count of all symbols within the chain	DMAS=2 DMAS=3 … DMAS=16	44 4D 41 53 3D 32 44 4D 41 53 3D 33 …	Number of all symbols of a specific chain (Structured Append).

Table 13: Data Matrix Print-Control Parameters

13.2.3 Parameters specific for MaxiCode

Special printer commands for MaxiCode				
MCM	Encoding mode	MCM=2 MCM=3 MCM=4 MCM=5	4D 43 4D 3D 32 4D 43 4D 3D 33 4D 43 4D 3D 34 4D 43 4D 3D 35	MCM=2: SCM (Structured Carrier Message) using only numeric postal codes 3: SCM with alphanumeric postal code 4: Standard 5: Extended error correction
MCU	Undercut in %	MCU=75	4D 43 55 3D + percentage	To optimize readability for a specific printer (scanner) you can set the undercut of the MaxiCode hexagons in percent. This changes the

				point size and the distance between the hexagons. The standard value is 75%.
MCAI	Structured Append Mode: index of the actual symbol	MCAI=1 MCAI=2 … MCAI=8	4D 43 41 49 3D 31 4D 43 41 49 3D 32 …	Used for Structured Append (chaining of symbols). Index of a specific symbol within the chain.
MCAS	Structured Append Mode: Total number of symbols	MCAS=2 MCAS=3 … MCAS=8	4D 43 41 53 3D 32 4D 43 41 53 3D 33 …	Used for Structured Append (chaining of symbols). Count of symbols used in the chain
MCPU	Use pre amble	MCPU=0 MCPU=1	4D 43 50 55 3D 30 4D 43 50 55 3D 31	For several industry standards the barcode data must start with a specific character sequence (the pre amble). MCPU=0: no pre amble is used MCPU=1: use pre amble
MCPD	Date (year) of the pre amble	MCPD=96	4D 43 50 44 3D + year „yy“	The pre amble includes a 2 digit year that can be defined with MCPD.
MCSC	Structured Carrier Message: Country code	MCSC=001	4D 43 53 43 3D + Country code	Country code of SCM (Structured Carrier Message). The country code consists of three characters. UPS uses SCM to encode address information. SCM is possible in Mode 2 and 3. For the other modes the SCM data has no influence.
MCSP	Structured Carrier Message: Postal code	MCSP=A4400	4D 43 53 50 3D + ZIP	Postal code (ZIP). In SCM-2 this information must be numerical and up to 9 digits long, for SCM-3 it can be alphanumeric and can hold up to 6 chars.
MCSS	Structured Carrier Message: Service class	MCSS=003	4D 43 53 53 3D + Service class	Service class (for SCM). Consists of three characters.
MCUP	UPS mode	MCUP=0 MCUP=1	4D 43 55 50 3D 30 4D 43 55 50 3D 31	MCUP turns on the UPS mode. The barcode data must contain data as specified by UPS (preamble, Structured Carrier Message,…). Do not use MCUP on one side or MCPU, MCPD, MCSC, MCSP, and MCSS on the other side in the same Print-Control! Encoding of function characters: Gs .. \x1d Rs .. \x1e Eot .. \x04

Table 14: MaxiCode Print-Control Parameters

13.2.4 Parameters specific for PDF417

Special printer commands for PDF417				
PDEC	Error Correction Level	PDEC=-1 PDEC=0 PDEC=1 PDEC=2 PDEC=3 PDEC=4	50 44 45 43 3D 2D 31 50 44 45 43 3D 30 50 44 45 43 3D 31 …	Error Correction Level (ECL). 1 (or not defined): the error correction level is set automatically based upon the code length. 0: no error correction, only

		PDEC=5 PDEC=6 PDEC=7 PDEC=8		error recognition 1: lowest error correction 8: highest error correction level
PDFC	Fixed number of columns	PDFC=-1 PDFC=1 … PDFC=30	50 44 46 43 3D 2D 31 50 44 46 43 3D 31 50 44 46 43 3D 32 …	-1 (or not defined): automatic calculation of the number of columns used for data representation. 1..30: number of columns. Note: rows and columns can't be fixed together – one has to be in automatic mode.
PDFR	Fixed number of rows	PDFR=-1 PDFR=3 … PDFR=90	50 44 46 52 3D 2D 31 50 44 46 52 3D 33 50 44 46 52 3D 34 …	-1 (or not defined): automatic calculation of the number of rows within PDF417. 1..30: number of rows in the symbol
PDRH	Row Height [in 1/1000 mm]	PDRH=-1 PDRH=1000	50 44 52 48 3D + Height	-1 (or not defined): Row height will be calculated from the symbol height .. PDRH>0: row height in 1/1000 mm
PDPC	Row/Column-Ratio: Column	PDPC=-1 PDPC=2	50 44 50 43 3D 2D 31 50 44 50 43 3D + Column (Ratio)	-1 (default): no col/row ratio predefined = automatic adaptation to data content (or 1 if PDPR was set). PDPC>0: columns of row/col ratio.
PDPR	Row/Column-Ratio: Row	PDPR=-1 PDPR=3	50 44 50 52 3D 2D 31 50 44 50 52 3D + Row (Ratio)	-1 (default): no col/row ratio predefined = automatic adaptation to data content (or 1 if PDPC was set). PDPR>0: rows in row/col ratio.

Table 15: PDF417 Print-Control Parameters

13.2.5 Parameters specific for MicroPDF417

Special printer commands for MicroPDF417				
PDRH	Row height [in 1/1000 mm]	PDRH=-1 PDRH=1000	50 44 52 48 3D + Height	PDRH=-1(or not specified): Row height depends on total symbol height / rows. PDRH>0: row height is set to a constant value [1/1000 mm]
MPM	MicroPDF Mode (encoding format)	MPM=0 MPM=1 MPM=2 MPM=3 MPM=4 MPM=5 MPM=6 MPM=7	4D 50 4D 3D + Mode	0 (default): analyze input data and switch to compaction mode for smallest symbol 1: Binary compaction (no data analysis) 2: UCC/EAN-128 Emulation 3: Code128 Emulation 4: Code128 FNC2 Emulation 5: Linked UCC/EAN-128 emul. 6: 05 Macro 7: 06 Macro
MPV	MicroPDF Version (version of data columns and data rows)	MPV=0 ... MPV=38	4D 50 56 3D + version index	0: automatic version selection depending on amount of input characters (default) >0: adjust specific symbol version - see table in chapter 20.3 MicroPDF-symbol sizes (Versions) The version determines the maximum number of encodable data characters and influences also the graphical

				data density of the symbol.

Table 16: MicroPDF417 Print-Control Parameters

13.2.6 Parameters specific for QR-Code

Special printer commands for QR-Code				
QRE	Error Correction	QRE=0 QRE=1 QRE=2 QRE=3	51 52 45 3D 30 51 52 45 3D 31 51 52 45 3D 32 51 52 45 3D 33	Error Correction Level (ECL) 0: low ECL 1: (Standard) ... 3:Highest ECL
QRFM	QR Code Format	QRFM=0 QRFM=1 QRFM=2	51 52 46 4D 3D 30 51 52 46 4D 3D 31 51 52 46 4D 3D 32	Format Specification: QRFM=0 (default): Standard 1: UCC/EAN 2: Industry (QRFI must be specified)
QRFI	QR Code Format Indicator	QRFI=a	51 52 46 49 3D + Wert	Code-Format-Indicator (used for QRFM=2). Value can be 1 alphanumeric character or 2 numeric chars.
QRM	QR Code Mask	QRM=-1 QRM=0 QRM=1 QRM=2 QRM=3 QRM=4 QRM=5 QRM=6 QRM=7	51 52 4D 3D 2D 31 51 52 4D 3D 30 51 52 4D 3D 31 …	Graphic Mask Pattern. QRM=-1 (default): Standard, mask is calculated automatically. QRM=0: Selects Mask #0 ... QRM=7: Selects Mask #7
QRV	QR Code Version	QRV=0 QRV=1 … QRV=40	51 52 56 3D 30 51 52 56 3D 31 … 51 52 56 3D 34 30	QR Code Version (=Size). QRV=0 (default value): Automatic Size Adaptation 1: smallest symbol ... 40: largest symbol (please refer to the table below)
QRAI	Structured Append Mode: Index of current symbol	QRAI=1 QRAI=2 … QRAI=16	51 52 41 49 3D 31 51 52 41 49 3D 32 ...	Index of the current symbol when using Structured Append
QRAP	Structured Append Mode: Parity Byte	QRAF=123	51 52 41 50 3D + Parity Byte	Parity Byte for Structured Append Mode (must be identical for all symbols in a chain).
QRAS	Structured Append Mode: Total number of symbols	QRAS=2 QRAS=3 … QRAS=16	51 52 41 53 3D 32 51 52 41 53 3D 33 ...	Number of symbols chained together with Structured Append

Table 17: QR-Code Print-Control Parameters

13.2.7 Parameters for Codablock F

Special printer commands for Codablock F				
CBC	Fixed number of columns	CBC=-1 CBC=4 … CBC=62	4342433D+Number	Default or -1 … automatic calculation 4..62: number of graphic columns in the symbol
CBR	Fixed number of rows	CBR=-1 CBR=2	4342523D+Number	Default or -1 … automatic calculation

		… CBR=44		2..44: number of graphic rows in the symbol
CBH	Row Height [in 1/1000 mm]	CBH=-1 CBH=1000	4342483D+Height	Default or -1 … row height will be calculated based upon symbol height. CBRH>0: row height is set in 1/1000 mm
CBS	Separator Line Width [in 1/1000 mm]	CBS=-1 CBS=1000	4342533D+Width	Default or -1 … width of row separator line will be calculated automatically CBS>0: separator line width is set in 1/1000 mm
CBF	Code Format	CBF=0 CBF=1	4342463D30 4342463D31	0 … standard format (default) 1 … EAN/UCC format

Table 18: Codablock-F Print-Control Parameters

13.2.8 RSS Expanded Stacked specific Parameter

Special printer commands for RSS Expanded Stacked				
SR	Segments per Row	SR=2 ... SR=22	53 52 3D 32 ... 53 52 3D 32 32	Number of data segments per row in RSS Expanded Stacked. Influences the width to height ratio.

Tabelle 19: RSS Expanded Stacked Print-Control Parameters

13.2.9 EAN.UCC Composite Symbology Parameter

Special printer commands for EAN.UCC Composite Symbology				
CC	2D Composite Component Combinable with EAN-8, EAN-13, UPC-A, UPC-E, all RSS Codes and EAN-128	CC=N CC=D CC=A CC=B CC=C	43 43 3D 4E 43 43 3D 44 43 43 3D 41 43 43 3D 42 43 43 3D 43	Type of Composite Component N...no CC D...default CC (recommended) A...CC-A B...CC-B C...CC-C (only with EAN-128) The data for the composite component must be separated by a | (vertical bar), e.g.: 12345678|CompositeData

Tabelle 20: EAN.UCC Composite Symbology Print-Control Parameters

14 Encoding Special Characters

If you want to use non-printable or special characters in your barcode data, you have to use “Escape Sequences”. They always start with a backslash (‘\’) followed by the sequence (see table below). You can use them also for encoding binary data (Bytes) into your barcode if the symbology offers this feature (e. g. PDF417 or Data Matrix).

- If you want to use escape sequences you have to turn on translation of escape sequences with the Print-Control “E=1” (to be done for each barcode type separately).
- Note: Please keep in mind, that when translation of escape sequences is enabled, you cannot code a backslash (“\”) directly. Use “\\” instead.

14.1.1 Implemented Escape Sequences

Esc-Sequence	Description
\a	Bell (alert)
\b	Backspace
\f	Form feed
\n	New Line
\r	Carriage Return
\t	Horizontal Tab
\v	Vertical Tab
\\	The Backslash \ itself
\0ooo	ASCII-character in octal notation ooo octal digits (0..7)
\ddd	ASCII-character in decimal notation ddd decimal digits (0..9)
\xhh	ASCII-character in hexadecimal notation hh hexadecimal digits (0..F)
\F	FNC1 or Gs (\x1d), used in UCC/EAN codes as field separator
\E	ECI (Extended Character Interpretation), used in 2D codes like MaxiCode, Data Matrix and QR Code. Is used for switching between various code pages (multiple character sets) – contact us to get further information.
\EB, \EE	special ECI identifiers for nesting ECIs. \EB (ECI Begin) opens a nesting level, \EE (ECI End) closes it. Used in QR Code
\G	GLI (Global Language Identifier), similar to ECI, but only used in PDF417.

Table 21: Escape Sequences

14.1.2 Symbology dependent control characters

The following table lists control characters, their escape sequences and the barcode-symbology they may be used for. The usage of these escape sequences is barcode dependent and differs from barcode symbology to barcode symbology.

Control character	Escape sequence	Valid for Barcode -Types
FNC1	\210 or \F	Code 128, EAN128, UCC128, 2D Codes
FNC2	\211	Code 128, EAN128, UCC128
FNC3	\212	Code 128, EAN128, UCC128
FNC4	\213	Code 128, EAN128, UCC128
DC1	\x11	Code93, Code93Ext
DC2	\x12	Code93, Code93Ext
DC3	\x13	Code93, Code93Ext
DC4	\x14	Code93, Code93Ext

Rs	\x1E	MaxiCode (Mode 3,4 SCM)
Gs	\x1D	MaxiCode (Mode 3,4 SCM)
Eot	\x04	MaxiCode (Mode 3,4 SCM)

Table 22: Barcode-specific Control Sequences

15 BarCode.ini Configuration File

15.1 Section [LICENSE_DATA]

Parameter Name	Description
Product	The product code (may be "1D" or "2D")
Licensee	Your name
License Mode	Your purchased license mode (may be "Single", "Site" or "World")
Number Of Licenses	Number of purchased licenses (e.g. "1")
License Key	The license key (e.g. "12345678")

Table 23: Barcode-Ini Section LICENSE_DATA

Example:

```
Product=1D
Licensee=Your Name
License_Mode =Site
Number_Of_Licenses=1
License_Key=Your Key
```

15.2 Section [DEBUG]

➢ ATTENTION: Do not activate debugging for production use!

Parameter Name	Description
Level	Selects the debug level used 0 for debugging off (Default) 1 for debugging on: a file named `barcode.log` will be written and all actions and parameters are logged into this file
BCText	Selects fixed Print-Controls for debugging If this line is activated (by removing the leading ;) all barcode-Print-Controls sent by R/3 are substituted by this text. You can test a special Print-Control without having to change the settings of the SAP R/3 system. Default: not activated because of leading; character (commented out)

Table 24: Barcode-Ini Section DEBUG

Example (enables writing a log-file and prints always a Code128 with encoded data “This is a test”:

```
Level=1
BCText=C=128,A=1,H=10,D=This is a Test
```

15.3 Section [SETTINGS]

Parameter Name	Description
Direction	Select the printing direction of the barcodes (up or down). Change this setting if the position of the bar code looks wrong. This parameter was introduced due to a bug in some SAPlpd versions. Refer to 21.18 (How to change the vertical alignment of the bar codes?). 0 or 1 for standard print direction of barcodes -1 for reversed print direction (Default): all barcode symbols are drawn from top-to-bottom instead of bottom-to-top

Shift	Baseline shift - used to fine-tune the baseline position of the bar codes. The bar code baseline is not always identical to the baseline of the text which is printed before the bar code. This effect is due to differences in the way printer drivers calculate text or font positions. 0 no shifting (default) 1 for PCL printers: shift down the bar code half of actual text height 2 for Postscript printers: shift down actual text height >2 correct base line in 20% steps of actual font height, see examples below: Shift=3 ... shift down 60% of font height Shift=5 ... shift down 100% of font height Shift=-5... shift up 100% of font height (negative values allowed)
DefModWidth	Specifies the default module width to be used Specifies the default module width in 1/1000 mm (e.g. 500 = 0.5 mm). The module width is the width of the smallest bar element in the symbol (also called “narrow bar width”), which influences also the total width. On demand you can specify the width of the single bars and spaces by using the L and S parameters in the Print-Control prefix. Most barcode specifications need a module width >= 0.19 mm. For 300 dpi printing resolution we recommend 0.254 mm (`DefModWidth`=254). *Note: The DefModWidth value applies only if the total barcode width is not set by Print-control parameter B*
DefGuardWidth	Specifies the default guard bar width in 1/1000 mm (e.g. 500 = 0.5 mm). This value is used if the width of the guard bar is not set by Print-Control. 0 no guard bar will be drawn (default) 300 guard bar with a line width of 0.3 mms is drawn
DefBarWidthReduction	The value specifies in percent how much you want to decrease the bar width (in percent). This parameter is used for ink jet printers, where unwanted ink flow can increases the bar width. 0 no width reduction (default) 10 bar width is printed 90% instead of 100% 100 the thin bars disappear (not recommended)
DefaultSet	Set of default values for the basic bar code parameters Here you can specify a specific set of bar code parameters to be used as default values if nothing was specified in the Print control. When using these default values you can get a readable, industry conform bar code even if you have an almost empty Print control (only specifying the bar code type). Default values are available for module width, symbol height, plain text on/off, PDF417 row/col ratio 0 TBarCode specific default values 1 Default values based on common industry standards Hint: if no default value is present for a specific bar code, `DefModWidth` is used
OnError	Specifies what to do if an error occurred during barcode printing (e.g. wrong Print-Control). Ignore print nothing Message print error box (Default)
ConvertToSpace	Replacement Character for Space Sometimes trailing spaces are eliminated by SAP, but should be encoded. This parameter specifies a character, which can be used instead of a space. During printing - before generating the bar code - all occurrences of the adjusted character are converted to space (hex code 20). @ All occurrences of @ are replaced with a space character ^ All occurrences of ^ are replaced with a space character ATTENTION: this parameter works only if you use "Data Splitting", please contact TEC-IT Support for more information about Data Splitting Mode.

Table 25: Barcode-Ini Section SETTINGS (part 1)

Example:

```
[SETTINGS]
Direction=1
Shift=1
DefModWidth=254
OnError=Message
DefaultSet=1
```

15.3.1 Default Font

Parameter Name	Description
DefFontName	Font name used for the human readable text line. If not set, use actual font of the document. Courier New use font family “Courier New”
DefFontSize	Default font height (point) used for the human readable text. If not set, use actual font size of the document. 10 use font size 10 pt
DefFontWeight	Select if the font is printed normal or bold. If not set, use actual font weight of the document. Bold print the font bold instead of normal

Table 26: Barcode-Ini Section SETTINGS (part 2)

The font characteristics applied to the barcode text are determined in the following order:

1. Font parameters defined in Print-Control?
   - yes: use Print-Control settings
   - no: check barcode.ini for default values
2. Font parameters defined in the barcode.ini?
   - yes: use barcode.ini settings
   - no: use actual font of currently printed document

> ➢ In the default installation, no Print-Control or `barcode.ini` settings are present, so the font of the actual document is used.

15.4 Section [EAN_UPC]

This section is relevant for EAN-8, EAN-13, UPC-A, UPC-E and related barcode symbologies.

Parameter Name	Description
FontName	Name of font, which is used for human readable text line Courier New use font family "Courier New" Default parameter is commented out (actual font of document is used)
FontSize	Point size, which is used for the human readable text 10 use font size 10 pt Default parameter is commented out (actual font size of document is used)
FontWeight	Selects if the human readable text is printed normal or bold bold print the font bold instead of normal Default commented out (use actual font weight of document)

Table 27: Barcode-Ini Section EAN_UPC

Example:

```
[EAN_UPC]
FontName=Courier New
FontSize=10
FontWeight=bold
```

- We recommend the settings “Courier New, 10, bold” if you have enabled DefaultSet=1

16 Hex – ASCII Conversion Table

This table helps you to enter the Print-Controls as a sequence of hex codes. Each character may also be represented by an equivalent hex code – e.g. „C“ = Hex 43 or „2“ = Hex 32.

Hex code	Character	Hex code	Character	Hex code	Character	Hex code	Character
0	NUL	20	[space]	40	@	60	`
1	SOH	21	!	41	A	61	a
2	STX	22	"	42	B	62	b
3	ETX	23	#	43	C	63	c
4	EOT	24	$	44	D	64	d
5	ENQ	25	%	45	E	65	e
6	ACK	26	&	46	F	66	f
7	BEL	27	'	47	G	67	g
8	BS	28	(	48	H	68	h
9	HAT	29	)	49	I	69	i
A	LF	2A	*	4A	J	6A	j
B	VT	2B	+	4B	K	6B	k
C	FF	2C	,	4C	L	6C	l
D	CR	2D	-	4D	M	6D	m
E	SO	2E	.	4E	N	6E	n
F	ST	2F	/	4F	O	6F	o
10	SLE	30	0	50	P	70	p
11	CS1	31	1	51	Q	71	q
12	DC2	32	2	52	R	72	r
13	DC3	33	3	53	S	73	s
14	DC4	34	4	54	T	74	t
15	NAK	35	5	55	U	75	u
16	SYN	36	6	56	V	76	v
17	ETB	37	7	57	W	77	w
18	CAN	38	8	58	X	78	x
19	EM	39	9	59	Y	79	y
1A	STB	3A	:	5A	Z	7A	z
1B	ESC	3B	;	5B	[	7B	{
1C	FS	3C	<	5C	\	7C	|
1D	GS	3D	=	5D	]	7D	}
1E	RS	3E	>	5E	^	7E	~
1F	US	3F	?	5F	_	7F	□

Table 28: ASCII-HEX Conversion

17 Predefined System-Barcodes

Print-Controls for the following system barcodes are predefined in SAP R/3 (starting with 3.0A).

Description	Barcode Type
ARTNR Article number	Code 128
AUFNR Request number	Code 128
BARCLVS Test Barcode in LVS	Code 39, without check digit
BC_93	Code 93 (height: 13 mm, no plain text)
BC_C128B	Code 128B, height 13 mm, no text
BC_CD39	Code 39, without check digit, no text, height 1,3 mm
BC_CD39C	Code 39 with check digit, height 13 mm, no text
BC_EAN8	EAN 8, height 13 mm, no text
BC_EAN13	EAN 13, height 13 mm, no text
BC_EANH (Release 3.0E)	For the Kyocera KYO device types, Code 128. For the HPLJ4 device type, EAN 128 (height: 13 mm, no text)
BC_I25	Interleaved 2of5 without check digit, height 13 mm, no text
BC_I25C	Interleaved 2of5 width check digit, height 13 mm, no text
BC_MSI	MSI without check digit, height 13 mm, no text
BC_MSIC	MSI with single mod-10 check digit, height 13 mm, no text
BC_MSIC1	MSI with mod-10 check digit, Height 13 mm, no text
BC_MSIC2	MSI with mod-11 check digit, Height 13 mm, no text
BC_PSN5 (Release 3.0E)	For the Kyocera KYO* device types, United States Postal Service (USPS) Postnet. For the HPLJ4 device type, ZIP+4 POSTNET 5. (Height: 3 mm, no text).
BC_PSN9 (Release 3.0E)	For the Kyocera KYO* device types United States Postal Service (USPS) Postnet. For the HPLJ4 device type, ZIP+4 POSTNET 9. (Height: 3 mm, no text).
C128A_00	Code 128, character set A (height: 5 mm, no plain text)
C128A_01	Code 128, character set A (height: 5 mm, no plain text)
C128B_00	Code 128, character set B (height: 5 mm, no plain text)
C128B_01	Code 128, character set B (height: 5 mm, no plain text)
CD39C_00	Code 39 with checksum (height: 5 mm, no plain text)
CD39C_01	Code 39 with checksum (height: 5 mm, no plain text)
CD39_00	Code 39 without checksum
CD39_01	Code 39 without checksum (height: 5 mm, no plain text)
KUNAUNR (sales order number)	Code 128
KUNAUPS (sales order item)	Code 128
MBBARC (test barcode - inventory management)	Code 128
MBBARC1 (test barcode 1 - inventory management)	EAN-8
RSNUM (reservation number)	Code 128
RSPOS (reservation item)	Code 128
RUECKNR (confirmation number)	Code 128

Table 29: Predefined Print-Controls

- A current list of predefined Print-Controls is also available at http://help.sap.com/
- Usually the listed bar codes are already defined in the `SWIN` device type - however sometimes the Print controls are missing or incorrect (so you have to edit them).

18 Data Flow when using SWIN Device Type

SAPlpd (or SAPsprint) can receive and process print jobs from different device types. Below you can see the difference in data flow between SWIN (and SAPWIN) based print data compared to others.

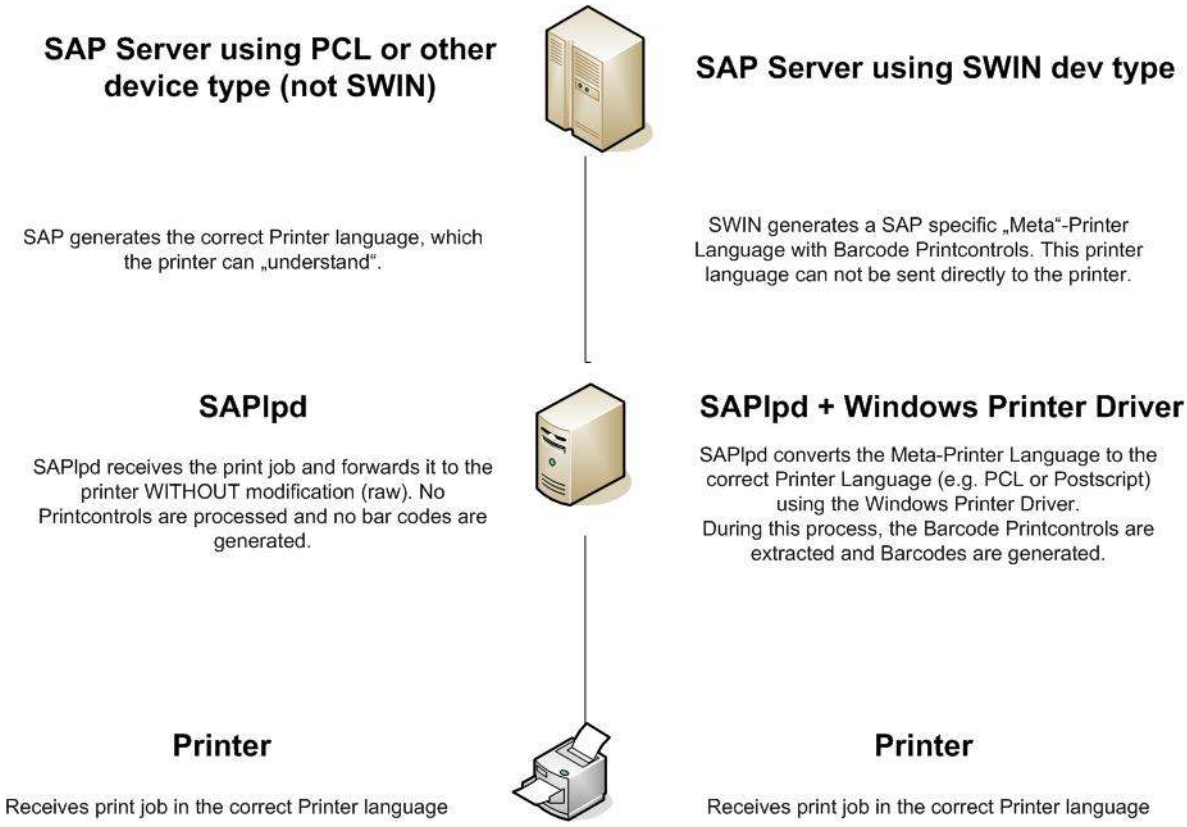


Figure 25: Data Flow SAPlpd

With the SWIN device type the so-called "SAPWIN" data stream is generated. This is a generic printer language and must be translated into the printer language of the destination printer (e.g. PCL or Postscript).

Print data in the SAPWIN data format can be processed by SAPlpd, SAPsprint or SAPWIN.DLL. Only through the SAPWIN "intermediate format" Windows printer drivers can be used ultimately.

19 DefaultSet Values

The information in this chapter applies if you want to use special default values for designated bar code parameters.

Precaution: set the parameter `DefaultSet=1` in the file `barcode.ini` to enable this feature. The default values in the table below are common values used in the industry and should create a readable bar code on most printers.

```
[SETTINGS]
DefaultSet=1
```

Please note:

- The default module width is used, if the parameter B= is not set in the Print-Control.
- The default height is used, if the parameter H= is not set in the Print-Control.
- The default text option is used, if the parameter A= is not set in the Print-Control.
- If a barcode symbology is not listed in the table, the following standard values are used
  Height = 10 mms
  Module Width = either the value of `DefModWidth` from `barcode.ini` (if present), or 0.508 mms.
- It is possible to adapt the characteristics of the EAN/UPC font in the `barcode.ini` file.

If required we can help you to adjust your device type (SWIN based) to produce a similar result as with the device types for HP printers. Please contact support@tec-it.com

The table below lists the values of DefaultSet 1.

Barcode	Module Width [mm]	Height [mm]	Plain Text
2/5 Industry	0.254	10.2	N
2/5 IL (Interleaved)	0.254	10.2	N
2/5 Matrix	0.254	10.2	N
CodaBar 2	0.254	10.2	N
Code 39	0.254	10.2	N
Code 39 ASCII (Extended)	0.254	10.2	N
Code 93	0.254	10.2	N
Code 93 ASCII	0.254	10.2	N
Code 128 (A/B/C/Auto)	0.254	10.2	N
EAN8	0.339	17.6	Y
EAN8P2	0.339	17.6	Y
EAN8P5	0.339	17.6	Y
EAN13	0.339	21.9	Y
EAN13P2	0.339	21.9	Y
EAN13P5	0.339	21.9	Y
UPCA	0.339	26.1	Y
UPCAP2	0.339	26.1	Y
UPCAP5	0.339	26.1	Y
UPCE	0.339	10.2	Y
UPCEP2	0.339	10.2	Y
UPCEP5	0.339	10.2	Y
EAN128 / UCC128	0.254	10.2	N

MSI	0.254	10.2	N
PostNet5 (ZIP 5 digits)	0.423	3.2	N
PostNet10 (ZIP+4 = 9 digits)	0.423	3.2	N
PDF417 + PDF417Trunc Row/Col ratio = 11:1	0.254	0.762 = row height	N
Codablock F	0.254	5.64 = row height	N
MAXICODE	0.870	25.0	N
DP Leitcode DP Identcode	0.423	25.4	Y
Australia Post Custom Australia Post Reply Paid	0.470	5.0	N
RSS Code Family (linear variants)	0.254	10.2	N
RSS Code Family (stacked variants)	0.254	Height depends on module width and data content	N
EAN.UCC Composite Symbology	0.254	Height depends on module width and data content	N

Table 30: DefaultSet Values

20 2D Symbol Sizes

20.1 Data Matrix symbol sizes

This table shows the possible user defined symbol sizes for Data Matrix. The symbol size can be defined by the Print-Control DMS. Set DMS to that index value that corresponds to the selected size.

Index	Symbol size (rows x cols)	Index	Symbol size (rows x cols)
0	automatic calculation	16	64 x 64
1	10 x 10	17	72 x 72
2	12 x 12	18	80 x 80
3	14 x 14	19	88 x 88
4	16 x 16	20	96 x 96
5	18 x 18	21	104 x 104
6	20 x 20	22	120 x 120
7	22 x 22	23	132 x 132
8	24 x 24	24	144 x 144
9	26 x 26	25	8 x 18
10	32 x 32	26	8 x 32
11	36 x 36	27	12 x 26
12	40 x 40	28	12 x 36
13	44 x 44	29	16 x 36
14	48 x 48	30	16 x 48
15	52 x 52		

Table 31: Data Matrix Symbol Sizes

20.2 QR-Code symbol sizes („Versions“)

This table shows the possible user defined symbol sizes for QR-Code. You can set them by the Print-Control „QRV=Index”. The column “Index“ represents the value that defines the corresponding size.

Index	Symbol size (rows x columns)	Index	Symbol size (rows x columns)
0	Automatic sizing	21	101 x 101
1	21 x 21	22	105 x 105
2	25 x 25	23	109 x 109
3	29 x 29	24	113 x 113
4	33 x 33	25	117 x 117
5	37 x 37	26	121 x 121
6	41 x 41	27	125 x 125
7	45 x 45	28	129 x 129
8	49 x 49	29	133 x 133
9	53 x 53	30	137 x 137
10	57 x 57	31	141 x 141
11	61 x 61	32	145 x 145
12	65 x 65	33	149 x 149
13	69 x 69	34	153 x 153
14	73 x 73	35	157 x 157
15	77 x 77	36	161 x 161

16	81 x 81	37	165 x 165
17	85 x 85	38	169 x 169
18	89 x 89	39	173 x 173
19	93 x 93	40	177 x 177
20	97 x 97		

Table 32: QR-Code Symbol Sizes

20.3 MicroPDF-symbol sizes (Versions)

This table shows the possible user defined symbol sizes for MicroPDF417. You can set them by the Print-Control „**MPV**=Index". The column "Index" represents the value that defines the corresponding size.

Index	Symbolgröße (Spalten x Zeilen)	Index	Symbolgröße (Spalten x Zeilen)
0	Automatic sizing (default)	21	3 x 32
1	1 x 11	22	3 x 38
2	1 x 14	23	3 x 44
3	1 x 17	24	4 x 4
4	1 x 20	25	4 x 6
5	1 x 24	26	4 x 8
6	1 x 28	27	4 x 10
7	2 x 8	28	4 x 12
8	2 x 11	29	4 x 15
9	2 x 14	30	4 x 20
10	2 x 17	31	4 x 26
11	2 x 20	32	4 x 32
12	2 x 23	33	4 x 38
13	2 x 26	34	4 x 44
14	3 x 6		
15	3 x 8		
16	3 x 10		
17	3 x 12		
18	3 x 15		
19	3 x 20		
20	3 x 26		

Tabelle 33: MicroPDF Symbol Sizes

21 Troubleshooting / FAQ

21.1 How can I verify that TBarCode/SAPwin was installed successfully?

If you are using SAPsprint or the SAPWIN.dll you can enable the barcode log file in order to see if the product is loaded into memory. Please check out the next chapter: 21.3.1 TBarCode/SAPwin Logfile “barcode.log”.

If you are using SAPlpd follow the steps below.

To check the correct installation of *TBarCode/SAPwin* simply start `SAPlpd` on the system in question.

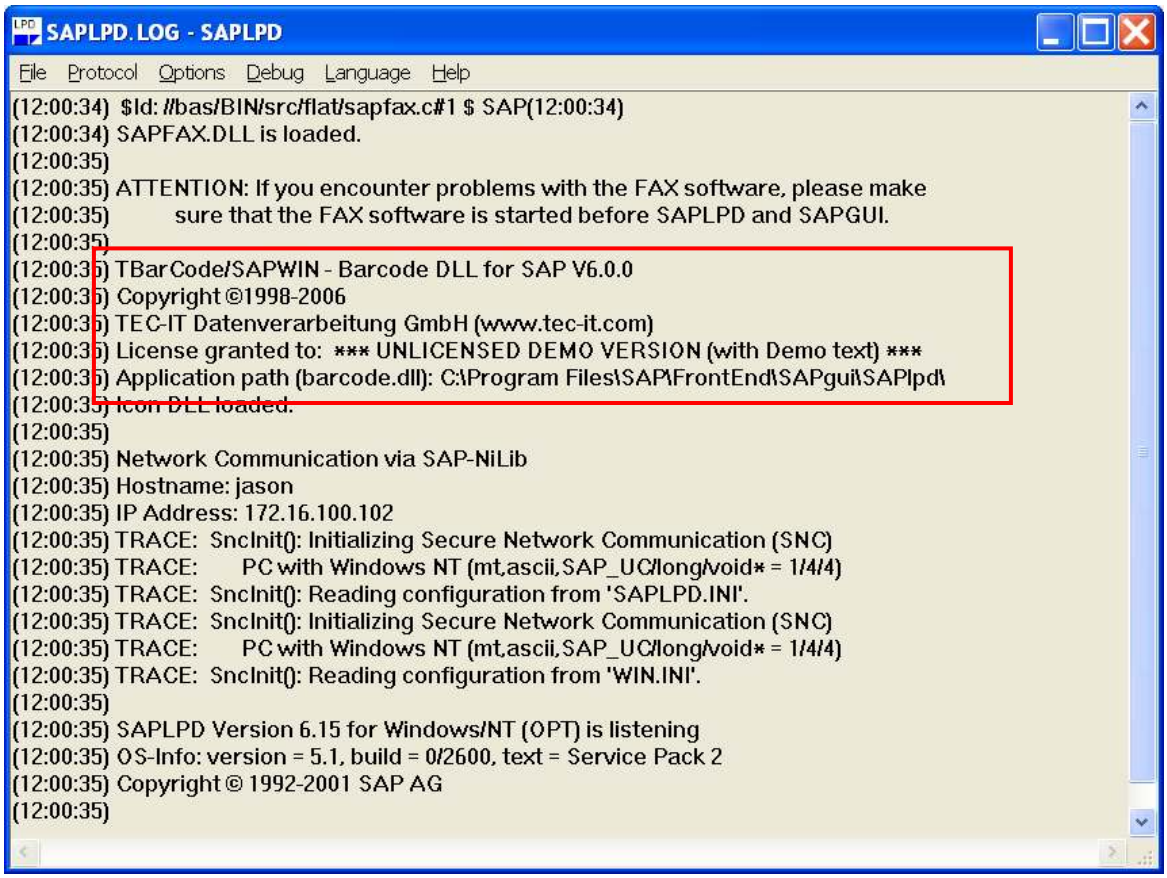


Figure 26: SAPlpd Start Screen-Log file

If *TBarCode/SAPwin* was installed successfully and it was loaded by `SAPlpd`, the marked message will be displayed. The picture above shows the unlicensed version.

If *TBarCode/SAPwin* was licensed successfully, the text “UNLICENSED DEMO VERSION” is replaced with the licensee name.

In the case that there is no such message check the following points please:

- Was *TBarCode/SAPwin* installed on your computer (client) successfully? Refer to chapter 5 - Install TBarCode/SAPwin in this documentation.
- Do you have restarted SAPlpd on your system (restarting is a must after installation!)?
- Check if the file `Barcode.dll` can be found in the installation directory (or in the Windows directory). If this file is missing, please reinstall *TBarCode/SAPwin*. Without this file barcode printing is not possible.

- Check if both files `Barcode.dll` and `barcode.ini` are placed in the same directory as the file `SAPlpd.exe`. If the barcode dll was installed in the Windows directory the files should be found as well, but try it in the path of `SAPlpd.exe`

21.2 How can I create a silent setup for deployment in my company?

Perfom the following steps:

1. Create a Response File:

   Record a Response File "Setup.iss" with the /r Parameter.

   ```
   TBarCode_SAPwin.exe /r /f1"C:\Temp\Setup.iss"
   ```

2. Execute setup in Silent Mode

   Do the Silent Installation with Parameter /s and specify the path of the iss File (except if it is in the same path as the setup, then drop the f1 Parameter).

   ```
   TBarCode_SAPwin.exe /s /f1"C:\Temp\Setup.iss"
   ```

   By default, Setup.exe looks for a response file called Setup.iss in the same directory as Setup.exe, but the /f1 argument can be used to specify an alternative name and location of the response file.

21.3 How can I turn on Logging for Trouble-Shooting?

There are three options for debugging *TBarCode/SAPwin*:

- The TBarCode-log file „`BarCode.log`“
- The SAPlpd-log file „`SAPlpd_F.LOG`“
- The SAPsprint log files

> ➢ Note: Please ensure to disable the logging feature before continuing with normal operation.

21.3.1 TBarCode/SAPwin Logfile “barcode.log”

There is a detailed logging facility provided by *TBarCode/SAPwin* – the file `barcode.log`.

Usually this debugging feature is disabled. By setting the parameter “`Level`” in the section `[DEBUG]` of the “`BarCode.ini`” file to the value „`1`“ you can turn on logging.

```
[DEBUG]
Level=1
```

If you are using SAPlpd, restart SAPlpd to load the new settings.

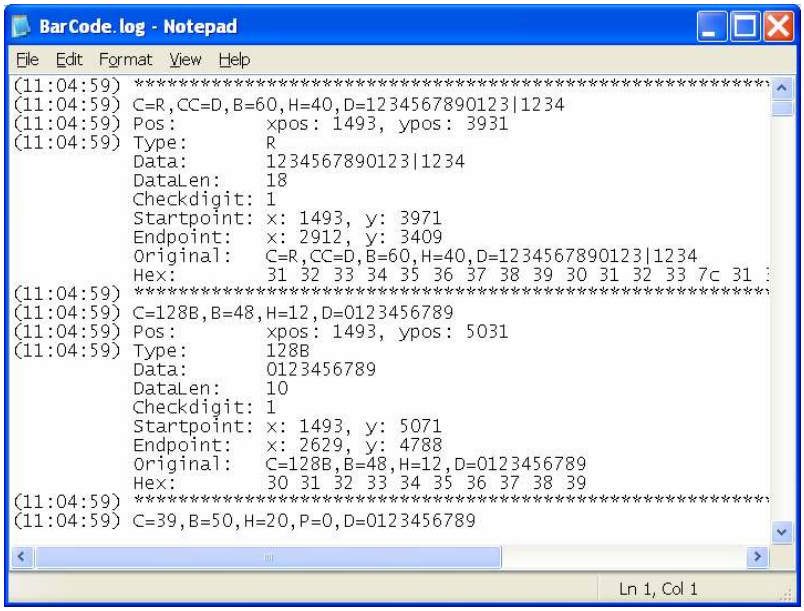


Figure 27: BarCode.log

TBarCode/SAPwin creates the log-file named "`BarCode.log`" in the installation-directory of the Barcode.dll. It contains product configuration, license information, SAP Print controls, bar code data and error messages.

- Ensure that the parameter `Level` in the file `barcode.ini` is set to `0` for production use (restart SAPlpd to read in the new settings).

21.3.2 SAPlpd Logfile

The `SAPlpd_F.log` file is written by `SAPlpd` and contains information about the SAP®-printing system. This feature is enabled only when `SAPlpd` was started using the command line parameter `-gn` (n=0..9).

- Please make sure to start `SAPlpd` without this parameter for normal operation, also ensure to delete existing `SAPlpd_F.log` files before continuing with normal operation.

21.3.3 SAPsprint Logfiles

You can help to find problems by enabling the logging in *SAPsprint*. Here are the commands you need to enter on the command line (for turning on maximum logging):

```
Set Loglevel to maximum
C:\Program Files\SAP\SAPSprint>sapsprint -oi LogLevel 9

Keep Spoolfile after printing (for analysis)
C:\Program Files\SAP\SAPSprint>sapsprint -oi KeepFile 1

Create a new directory for spoolfiles and logfiles
C:\Program Files\SAP\SAPSprint>mkdir c:\temp\sapsprint

Set the LogPath to our new directory
C:\Program Files\SAP\SAPSprint>sapsprint -os LogPath c:\temp\sapsprint

Log TCP/IP parameters
C:\Program Files\SAP\SAPSprint>sapsprint -oi NiTrace 1

Stop and Start SAPsprint
C:\Program Files\SAP\SAPSprint>sapsprint -p
C:\Program Files\SAP\SAPSprint>sapsprint -s
```

Now if you print something you get the spool file and a log file of *SAPsprint* in the path c:\temp\sapsprint (this path must exist!!).

The generated files may help our Support Team to find the problem (if it is a problem with the Barcode DLL).

21.4 No barcodes are printed

21.4.1 Wrong Host Spool Access Method

Please make sure that you are using host spool access method “S” or “F” – otherwise SAPlpd (or SAPsprint / SAPWIN.dll) is not used in the correct mode!

Access method	Description
S	Printing through SAP protocol. SAPlpd / SAPsprint must be already running (e.g. on a print server). Barcodes are created by the Barcode.dll of TBarCode/SAPwin.
F	Front-end printing. The print data stream is sent directly to the client, which starts SAPlpd automatically in order to process the print job. Barcodes are created by the Barcode.dll of TBarCode/SAPwin.
G	For printing on the SAP Client by using “Control Technology”. The SAPWIN.dll is loaded by the client and manages the print job processing. On demand SAPWIN.dll loads the Barcode.dll of TBarCode/SAPwin into memory for bar code generation.
U	Do not use U if you want to create bar codes with TBarCode/SAPwin.

21.4.2 Incompatible Printer Driver

In some cases the Windows printer driver of the printer in question is not working as expected. Changing the printing method of *TBarCode/SAPwin* in the `barcode.ini` file may help. Add the following line to the barcode.ini file in the installation path of *TBarCode/SAPwin (path of barcode.dll)*:

```
[DRAW_MODE]
UseGDIRect=1
```

When using SAPlpd: restart SAPlpd if running and try printing again.

More information can be found on our web site http://www.tec-it.com/

21.4.3 Wrong device type (not based on SWIN)

Check if the device type for your printer is based on a copy of „SWIN“* (Rel.4.x/SAPlpd 4.09+ ONLY!)“.

> ➢ A device type copy based on SWIN is recommended. SWIN contains most barcode definitions. In contrast SAPWIN contains only 2of5IL.

21.4.4 Wrong Variant of Print-Control Prefix

The so-called „variant“ of the Print-control prefix must be set to `extended` (and not to „`direct`“):

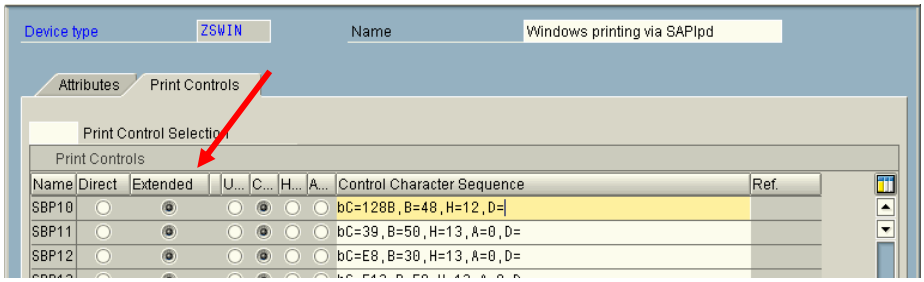


Figure 28: Print-Control Settings

Proceed this way: Transaction SPAD ► Spool Administration Initial Screen ► Tab „Device Types“ ► Button „Device Types“ ► Select your device type (e. g. „ZSWIN“) ► Button „Print-Controls“ ► Button “Change” (F8) ► Page-Down until required Print-Control is displayed. Then change setting to “extended“ and save.

21.4.5 Missing CRT8 Runtime DLLs on the target system

Starting with version 6.0.2 the Barcode DLL needs the Microsoft Visual Studio 2005 (CRT 8 Runtime) DLLs. These are installed automatically with the setup program of TBarCode/SAPwin.

If you copy the Barcode DLL manually (or via script) into the SAPlpd or SAPsprint directory, it can be that the required CRT 8 DLLs are missing on the target system and the Barcode DLL can not be loaded. You should see an error message in the event log of the target system (please check).

Solution: Either use the original setup of *TBarCode/SAPwin* or install the CRT 8 Runtime DLLs from the following package from Microsoft:

http://www.microsoft.com/downloads/details.aspx?FamilyId=32BC1BEE-A3F9-4C13-9C99-220B62A191EE&displaylang=en

21.5 Always the same barcodes (e.g. 2 of 5 interleaved) are printed

21.5.1 Wrong base device type

You have copied the device type SAPWIN instead of SWIN. We recommend using SWIN – it contains definitions for all usual barcode formats. In SAPWIN per default all Print-Controls are initialized to the bar code type 2of5ITL.

Solution:

Please refer to chapter 6 (Create a Device Type Copy) and make sure to choose SWIN as base device type. In some older SAP releases missing or wrong initialized Print-Controls may occur (even in SWIN) – in this case refer to chapter 12 (Print-Controls) and define the Print-Control as you need it.

21.5.2 LOCL-Printer

If the host printer „locl“ is set up in the output device (Spool Administration – Transaction SPAD) the predefined device type SAPWIN is always used for printout, regardless what else is adjusted.

Solution:

In Spool Administration (SPAD) you need to specify the exact printer name as for the host printer (or adjust „__Default“). Use access method “S” or “F” and check your printer barcode settings with SE73.

21.6 Wrong barcode data / wrong output

If you encounter problems with unreadable barcodes – please ensure that your reading devices (scanners) are configured correctly. If everything is OK with your reading devices please ensure that the correct data is encoded in your barcode.

> ➢ Make sure that your SAPscript/APAB does not add additional line-feeds, carriage returns or spaces to the barcode data.

21.7 Barcode error-messages while printing

If there is an error while creating a barcode (usually due to invalid data characters which cannot be encoded by the selected barcode symbology) the corresponding error code together with additional input data will be written the log files.

Make sure your SAPscript/ABAP does not encode hidden spaces or new-line-characters. Refer to 21.3(How can I turn on Logging for Trouble-Shooting?).

21.8 Unwanted characters are printed after or beside the barcode

Characters like ;W0; or bC=PSN9 are printed beside the barcode. This occurs if the Print-Control suffix „SBS01“ is wrong defined. Its definition must look like this:

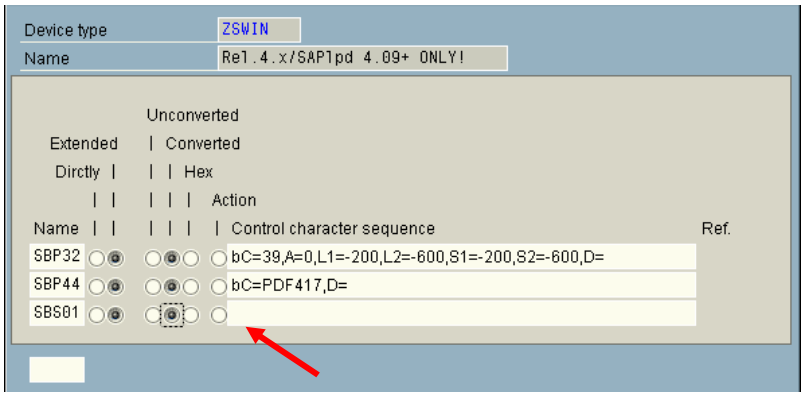


Figure 29: Correct Print-Control Definition of SBS01

Proceed this way: Transaction SPAD ► Spool Administration Initial Screen ► Tab „Device Types“ ► Button „Device Types“ ► Select your device type (e. g. „ZSWIN“) ► Button „Print-Controls“ ► Button “Change” (F8) ► Page-Down until Print-Control suffix „SBS01“ is listed.

- SAP 4.6 (and earlier): change the setting of SBS01 to “converted“ (and make sure the Control character sequence is empty).
- SAP 4.7: change the setting of SBS01 to ”Direct” and turn on the Hex encoding. As for the Control character sequence, enter 1B

Save your settings.

Optional: You can check the correct setting of this Print-Control with the "SAPscript Font Maintenance" like follows:

Transaction SE73 ► Select „Printer barcodes" ► Button „Display" ► Select Device Type (e.g. ZSWIN) ► F2 to select ► Select Suffix SBS01 (any barcode) ► Button „Display Print-Control".

If you selected "Extended" in the above dialog, you should see Variant 5 in the Print-Control.

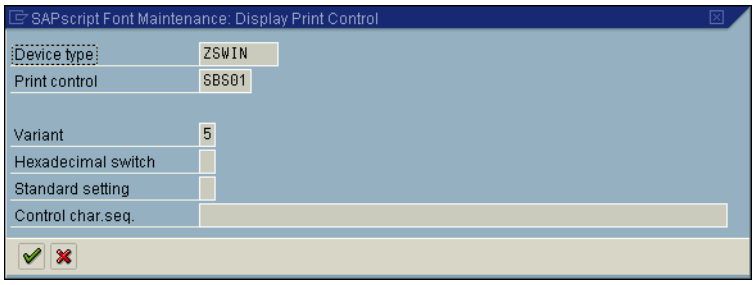


Figure 30: Correct Print-Control definition of SBS01 – Font Maintenance

21.9 I am using WAS and try to print "SAPSCRIPT-BARCODETEST", but some barcodes are missing

1. You need to work with device type (or a copy of) SWIN or a variant of SWIN.
2. Check the barcode related Print-Controls of your device type. Make sure that the suffix SBS01 (edit with SE73 – printer barcodes) is empty and is using variant 5. If SBS01 is not empty, delete its content.
3. Make sure that in the style "S_TEST" all character formats <B0>..<BK> are defined as barcodes.
4. In some versions only B0..B9 has been defined as barcode, so not all formats of SAPSCRIPTTEST are printing as barcode.

21.10 SAPlpd on Windows Terminal Server uses always the same printer

If you have not set the system variable LP_CMD, all users are printing through the default printer of the first user, who initiated a print job on the terminal server.

Solution: the system variable LP_CMD must have the following value:

```
D:\program files\SAP\FrontEnd\SAPgui\SAPlpd\saplpd.exe -f&F -c&C -P&P
```

If not recognized, make sure you have set the correct path to SAPlpd or you may need to restart the system in order to read in the new value of LP_CMD.

Now SAPlpd will be started (and terminated) for each print job, this is necessary for correct operation.

21.11 Why is a horizontal bar drawn across the barcodes?

This can occur if

- The printer driver has a problem (see 21.4.2)

- Your are currently working with the unlicensed demo version of TBarCode for SAPlpd Version 5. Please refer to section 10 (Obtain a License) or contact us for a license file.

21.12 Testing Tray Selection and Print Mode Selection

SAP provides predefined SAPscript documents which can be used to test whether tray selection and print mode selection are working properly on your printers.

- For tray selection, print the SAPscript document `SAPSCRIPT-TRAYTEST`, ID `ST`, Language `D` / `E`.
- For print mode selection, print the SAPscript document `SAPSCRIPT-PRINTMODETEST`, ID `ST`, Language `D` or `E`.

21.13 No Frontend Printing possible with SAPsprint

You want to use Frontend Printing with Host Spool Access Method F, but it is not working.

Please check out SAP Note 821519.

If you have R/3 4.6c you don't have the required patch level to update to the new spool access method "G".

➢ Frontend Printing with SAPsprint or SAPFprint can be used with "G" only.

21.14 The wrong paper tray is used

21.14.1 Problem

Tray-Control works fine if there are no barcodes in the document. But if a barcode exists in the form, the default paper tray will be chosen automatically, also when another paper tray is selected explicitly.

21.14.2 Solutions

TBarCode/SAPwin is called from SAPlpd only if the Print-Control Esc + “b“ has been received, then the rest of the Print-Control will be decoded and the barcode will be drawn. *TBarCode/SAPwin* doesn’t have a direct influence to the tray control.

Please perform the following checks:

- Please check, if you are using always the same device type
- Make sure you are printing always the same document or form (frequently the A4/Letter problem causes such problems).
- Perhaps a Print-Control which was used for barcodes previously was changed in order to be used for tray-control purposes and this Print-Control is still used in the document.
- Check if there is a barcode related Print-Control that begins with “T“ (instead of “b“)?
- Make sure it is not printer driver related problem (choose another printer driver)
- Make sure you are using the latest `SAPlpd.exe` version

21.15 How to enable Hebrew Double-Byte character set?

Hebrew characters are represented as Double Byte Character Set (DBCS). `SAPlpd.exe` needs to know the Codepage in order to decode the DBCS correctly. Also other DBCS are supported (Japanese, Kanji, …).

Change the `WinCharSet` option to Hebrew as follows: Edit the file "`Win.ini`" in the Windows directory and add (or edit) the following section:

```
[SAPlpd]
WinCharSet=177
```

Save `win.ini` and restart `SAPlpd` to read in new settings.

21.16 How to encode more than 70 characters in a 2D bar code?

SAPscript, but also Smart Forms has a maximum limit of 70 characters[11] per bar code. This limit causes problems when using 2D symbologies for high data capacity like PDF417 and Data Matrix.

For SAPscript there are two workarounds available:

- Work with a reduced font size as shown in SAP note 197177.
- Use the new command "RAWTEXT" as shown in SAP note 497491.

For Smart Forms there is a solution described in SAP note 497380.

Alternatively *TBarCode/SAPwin* offers the possibility for splitting up transmission of the bar code data into several "portions" - please contact TEC-IT's support sap@tec-it.com for details.

21.17 How can I encode "Flattermarken" alias "OMR"?

Add a new System-Barcode and then add a new Printer barcode for OMR (e.g. ZBC_OMR). Adjust the Print-Control prefix (SE73) of the printer bar code as follows (leave the suffix empty with Variant 5):

Encoding	Print-Control
ASCII	bC=FLM,B=15,H=30,R=90,A=0,D=
Hex	62433D464C4D2C423D31352C483D33302C523D39302C413D302C443D

Table 34: Flattermarken Sample (part 1)

Parameter	Value	Description
C	FLM	Flattermarken or "OMR" Code
B	15	width=15mm
H	30	height=30mm
R	90	rotation=90°
A	0	no text output

Table 35: Flattermarken Sample (part 2)

[11] This limit depends on the used SAP Release and the installed patch level.

21.18 How to change the vertical alignment of the bar codes?

The vertical alignment of the bar code seems to be wrong. All of the barcodes are printing about 1/2 of the barcode height below the desired baseline.

21.18.1 Solution

You can change the baseline with two configuration parameters in the "`barcode.ini`" file. The baseline alignment checkbox in SAP has no affect.

The first parameter `Direction` indicates the printing direction as shown below:

Figure 31: Barcode printing direction (adjusted in Barcode.ini)

The second parameter `Shift` can be used to “fine-tune” the baseline position.

> ➢ When using SAPlpd you need a restart of SAPlpd to read in the changed settings.

21.19 The Font “Courier” isn’t printing correctly with SAPlpd

In the SAPlpd menu open `Options ► Font Substitution`“ and check if the correct Windows Font is assigned to the SAP Font „COURIER NEW“.

If the Windows Font „COURIER“ is assigned to the SAP Font, it can make problems. Please choose in this case the button “`Default`” (deletes the Windows Font-name) and try a test print again.

21.20 How can I use Application Identifiers (FNC1)?

Application Identifiers are used in the barcode symbols EAN-128 and UCC-128.

An Application Identifier (AI) is placed in front of the value of a data field and informs about the purpose of the data. An Application Identifier (AI) is a standard cipher combination which consists of 2-4 digits. The AI clearly defines a data field’s content and format (field with fixed or variable length, numeral or alphanumeric). Several data fields - each with preceding AI - could be encoded in a barcode symbol.

> ➢ The brackets, which enclose the AIs, don’t have to be encoded in the input data of the bar code. The brackets will be created automatically in the human readable text line if an AI was recognized.

Data fields with variable length have to be limited with a field separator. For separating those data fields in EAN-128, a special symbology character is used: FNC1. For encoding the FNC1 into the input data a “placeholder” is needed. This placeholder character can be adjusted in the Print-Control prefix.

For Example: If the exclamation mark ! should be used as placeholder for FNC1, the control sequence %= ! must be added to the Print-Control prefix.

21.20.1 Sample EAN-128 prefix

Parameter	Value
Variant	5
Hex-Switch	On
Print-Control (HEX)	62433D453132382C253D212C413D312C423D37362C483D32352C443D
Print-Control (ASCII)	bC=E128,%=!,A=1,B=76,H=25,D=

Table 36: EAN-128 Sample (part 1)

EAN-128 was designed to encode multiple data fields together. If you don’t use the maximum number of characters in a variable-length data field, you have to encode the FNC1 as field separator at the end. In the Print-Control above we set the exclamation mark ! to be used as placeholder for FNC1.

21.20.2 Encoding Examples

Encoding a Batch number: The AI for the batch number is 10. The AI for the batch number is defined with the format n2 + an..20, which means, that after the AI, the batch number with variable length (but with maximal 20 alphanumerical characters) is encoded.

Data to be encoded	10 + batch number = 1012345678
Barcode data	1012345678
The human readable text	(10)12345678 The (and) are automatically determined by *TBarCode/SAPwin*
Print-Control (ASCII)	bC=E128,%=!,A=1,B=76,H=25,D=

Table 37: EAN-128 Sample (part 2)

Using several AI’s: In this example two data fields will be running together:

- Batch number AI (10) : data format: n2 + an..20
- EAN Article number AI (01) : data format: n14

Data to be encoded	10 +batch-number + ! + 01 + EAN-# product-number
Barcode data	1012345678 + FNC1 + 0112345678901234
The human readable text	(10)12345678(01)12345678901234 The (and) are automatically determined by TBarCode/SAPwin

Table 38: EAN-128 Sample (part 3)

The “!” in this example stands for FNC1 (have a look at Print-Control prefix) and is necessary, because the maximum numbers of characters (20 characters) has not been utilized.

➢ Hint: It is not allowed to add an FNC1 after the last data field.

21.21 I get the error message „NilBind: service 515 in use”

21.21.1 Symptom

During printing – while SAPlpd starts - you get this error message:

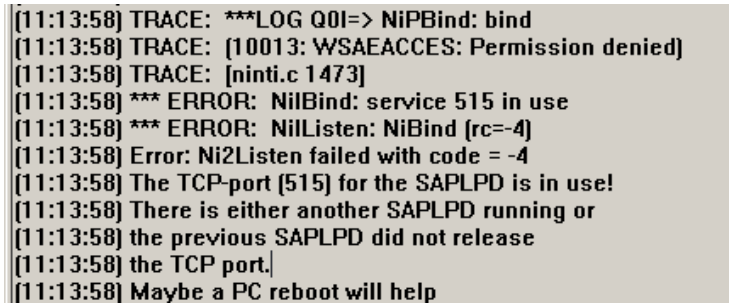


Figure 32 :Error message “NilBind: service 515 in use”

In this sample screen shot, SAPlpd.exe wants to use TCP Port 515 (as per default). If another process or another instance of SAPlpd.exe is running and using this port you get this error.

Please check out OSS note 0044009 to see how a TCP port can be changed. We suggest installing SAPlpd as Windows system service only if the SAPGUI Client won’t be used or SAPlpd won’t be started manually.

21.21.2 Possible Causes

- You have installed SAPlpd as service (refer to OSS Note 0042268) and want to run a second instance manually.
- You are using SAP in an Unix environment and for printing you use `lpd` to send jobs to a Windows/2000 print server. The `lpd` process on the W2k server listens on the same port as SAPlpd.exe.
- If your Windows server has the Unix printing services installed, it can be, that the LPR Port (515) is already used by this service.
  Either you de-install the Unix printing services (if you don’t need them) or you use another port for SAPlpd (according to OSS Note 0041913 there is a command line parameter `-r` to set the receiver port. of SAPlpd – see OSS note).
  http://www.microsoft.com/windowsxp/pro/using/itpro/networking/printservicesunix.asp

21.22 SAPlpd.log shows: “Unknown ESCAPE-Code: 0x1B 0x36”

- Please make sure that you have installed the latest downloadable version from http://www.tec-it.com
- Please check out that you have copied the device type `SWIN` to `ZSWIN` as shown in our documentation. Refer to chapter 6 (Create a Device Type Copy).

Each Print-Control in the device type begins with an escape character. If the Print-Control contains wrong characters, you may get this error. Barcode Print-Controls start with “b”.

21.23 I added a new Print-Control, but SAP could not find it

Sometimes, when you are creating a Print-Control (prefix or suffix), it has to be “dirty” in order that it is saved properly. To make it “dirty” edit it (add and delete a space) and then save it.

21.24 I can't define a Print-Control with variant 5 - SAP opens the window with value 1

The variant cannot be changed within SE73, but it can be changed within SPAD.

Options ► SPAD - Button "Full Admin…" ► Tab "Device Types" ► Enter device type ZSWIN ► Tab "Print-Controls" ► F8 (change) ► select the Print-Control to change.

Now there are radio buttons to switch between "Direct" (Variant 1) and "Extended" (Variant 5). Switch to Extended to get variant 5 for a Print-Control.

21.25 Is it possible to use the same output device in SAP for all users?

21.25.1 Local and central printing

Different users are printing bar codes from different locations. Is it possible to work with the same output device in SAP for all users or have I to define different output devices?

You have to define only "one" output device for the local printing on the client or over a central print-server.

21.25.1.1 Local printing

SAPlpd.exe is running on the client, you have to install *TBarCode/SAPwin* on each client which wants to print barcodes.

Use access method F (front end) with device type ZSWIN (or the name of your SWIN-copy). Usually the default printer is in use on the client (but you can also adjust every arbitrary printer which is available on the client)

http://help.sap.com/saphelp_470/helpdata/en/38/5bc3f2e4bd11d18e2b0000e83dd9fc/content.htm

21.25.1.2 Central printing

SAPlpd.exe is running on a Windows server (e.g. print-server), *TBarCode/SAPwin* will be installed on this server, use access method S (SAP protocol) with device type ZSWIN (or the name of your SWIN-copy). You can use local and network printers which are installed on the print-server.

http://help.sap.com/saphelp_470/helpdata/en/7e/36e4cd023411d399b70000e83dd9fc/content.htm

21.25.2 List printing

What can I do with the „normal" list printing, when it is running with the same output devices (ext. output management system) and when I have to define different output devices?

One and the same output device can „contain" two drivers (the SAPscript and the list driver). You can also use another driver for list printing (that is not indicated in the output device, but in the device type ZSWIN).

In the SAP Information (look at the following link) you can use SWIN (and/or ZSWIN) for list printing. But you can also use PCL, Postscript and so on.

http://help.sap.com/saphelp_470/helpdata/en/d9/4a958851ea11d189570000e829fbbd/content.htm

21.26 How to retrieve the System-ID?

For a Single License, TEC-IT needs the System-ID of the computer (the client) where you want to use *TBarCode/SAPwin*.

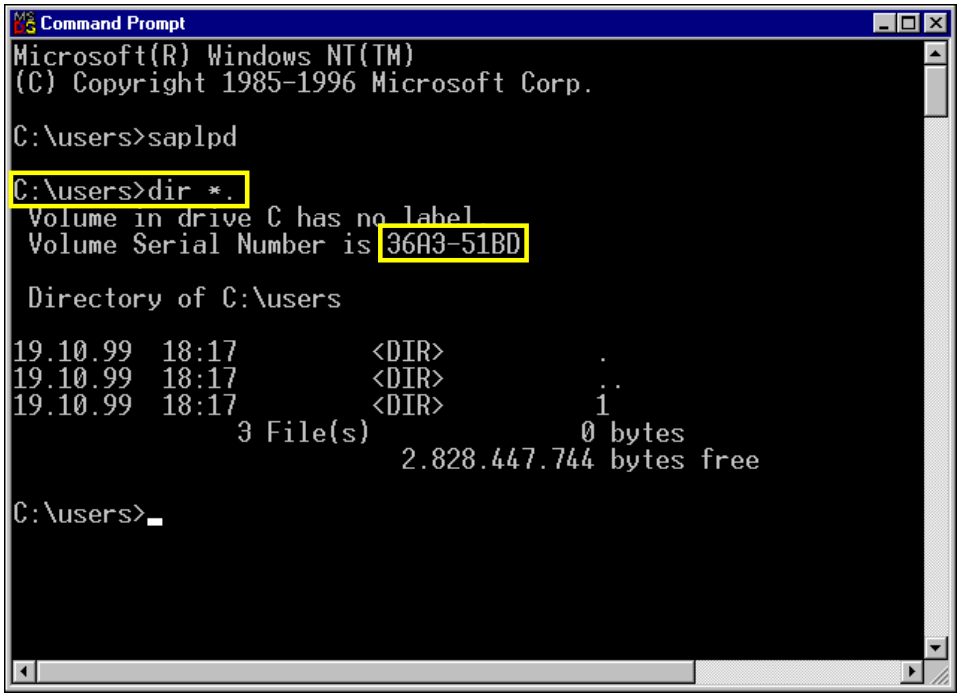


Figure 33: System-ID

To get this System-ID, please perform the following commands.

1. Open the command prompt (DOS-Box, `cmd.exe`) on your client
2. Change to the drive containing your operating system (usually drive C:) by typing „`C:`“ followed by carriage return.
3. Type in the DOS-command „`dir *.`“ or „`dir | more`“ followed by carriage return.
4. The System ID is displayed as Volume serial number” (refer to screen-shot).

21.27 How to license the product in “barcode.ini”?

After you have ordered *TBarCode/SAPwin* you will receive your license data containing the license key.

The license data consist of several lines, which have to be entered (or copied with Copy and Paste) into the `barcode.ini` file. This file must reside in the same directory as the “Barcode.dll” program file (refer to the installation path of *TBarCode/SAPwin*) or in the Windows directory.

When using SAPlpd you have to restart SAPlpd (or your system) so the changes can take effect.

If a valid license file is installed on your client it turns your restricted installation (which is printing a “Demo” text over the barcode) into a full-featured installation without any restrictions.

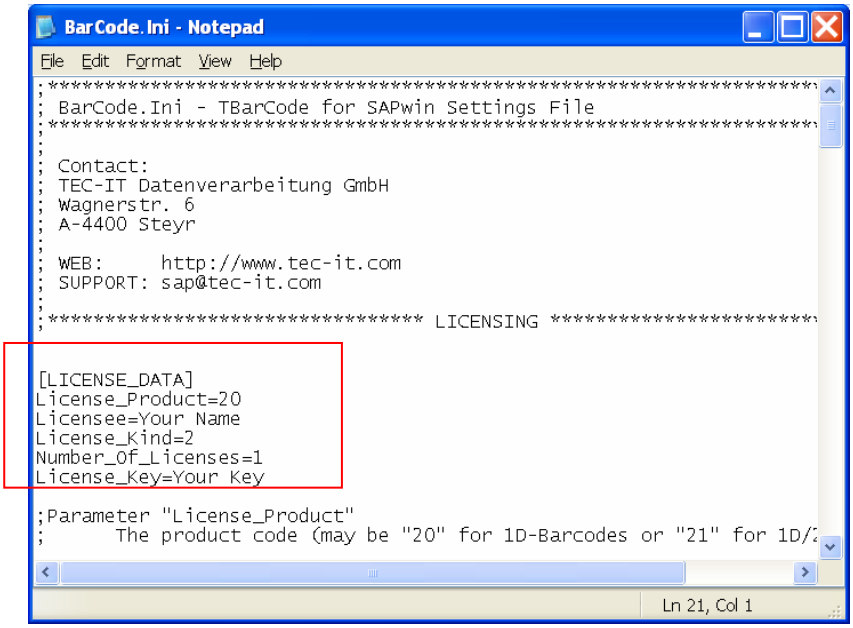


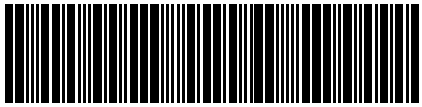
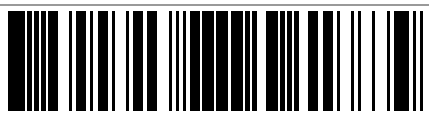
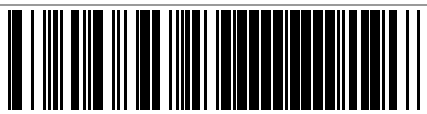
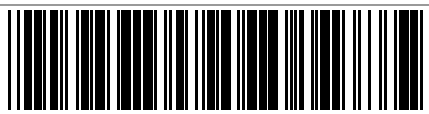
Figure 34: Barcode.ini

The license data section in the BarCode.ini File contains the following information (refer to screen-shot):

- `License_Product` (the product code)
  20 … 1D license for linear bar codes (Code 2 of 5, Code 128, Code 39, EAN, UPC…)
  21 … 2D license for two-dimensional codes (PDF417, MaxiCode, Data Matrix...)
  The 2D license includes also the 1D bar codes.
- `Licensee` (usually the company name)
- `License_Kind` (ID of the license type)
  1 ... Single; 2 ... Site; 3 ... World/Enterprise
- `Number_Of_Licenses`
- `Licence_Key`

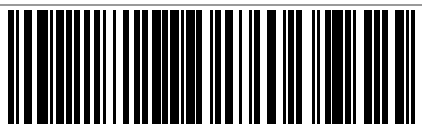
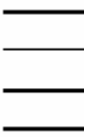
22 Supported Barcodes

22.1 Linear Bar Codes (1D)

2 of 5 Industrial Valid characters: Check digit method: Default:	 "0"..."9" Modulo10 no check digit	 0123456789
Notes:		
2 of 5 Interleaved Valid characters: Check digit method: Default:	 "0"..."9" Modulo10 no check digit	 0123456789
Notes:	If the number of digits is odd a leading zero will be inserted automatically. This barcode type can encode only an even number of digits	
2 of 5 Matrix Valid characters: Check digit method: Default:	 "0"..."9" Modulo10 no check digit	 0123456789
Notes:		
CodaBar Valid characters: Check digit method: Default:	 "0"..."9", "-", "$", ":", "/", ".", "+", "A", "B", "C", "D" - no check digit	 A01234:/.+ A
Notes:	"A", "B", "C", "D" are only useable as start or stop characters.	
Code 39 Valid characters: Check digit method: Default:	 "0"..."9", "A"..."Z", "-", ".", " ", "*", "$", "/", "+", "%" Modulo43 no check digit	 ABC123-+
Notes:	Start- and stop characters (*) are created automatically and must not be included in the input data.	
Code 39 Extended Valid characters: Check digit method: Default:	 ASCII-characters between 0..127 Modulo43 no check digit	 ABCabc()?
Notes:	Start- and stop characters (*) are created automatically and must not be included in the input data.	

Code 93		
Valid characters:	“0”..”9”, “A”..”Z”, “-“, “.”, “ “, “$”, “/”, “+”, “%”	
Check digit method:	Modulo47 (2 digits)	
Default:	Modulo47	
Notes:	Start- and stop characters (*) are created automatically and must not need be included in the input data.	
Code 93 Extended		
Valid characters:	ASCII-characters between 0..127	
Check digit method:	Modulo47 (2 digits)	
Default:	Modulo47	
Notes:	Start- and stop characters (*) are created automatically and must not need be included in the input data.	
Code 128 Subset B		
Valid characters:	ASCII-characters between 0..127	
Check digit method:	Check digit included in the code	
Default:	-	
Notes:		
EAN 8		
Valid characters:	“0”..”9”, 7 digits + 1 Check digit	
Check digit method:	Check digit included in the code	
Default:	-	
Notes:	Check digit is automatically calculated if not in the input data (that is when only 7 digits are used for creating the code). Used for article bar coding.	
EAN 8 with 2 digits add-on		
Valid characters:	“0”..”9”	
Check digit method:	Check digit included in the code	
Default:	-	
Notes:	Same as EAN8, but with 2 add-on digits enclosed	
EAN 8 with 5 digits add-on		
Valid characters:	“0”..”9”	
Check digit method:	Check digit included in the code	
Default:	-	
Notes:	Same as EAN8, but with 5 add-on digits enclosed	
EAN 13		
Valid characters:	“0”..”9”, 12 digits + 1 Check digit	
Check digit method:	Check digit included in the code	
Default:	-	
Notes:	Check digit is automatically calculated if not in the input data (that is when only 12 digits are used for creating the code). Used for article bar coding.	

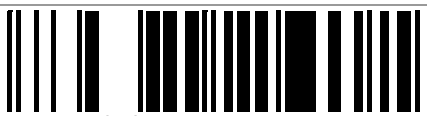
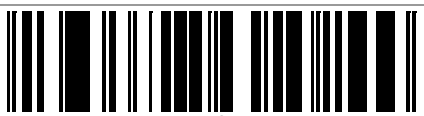
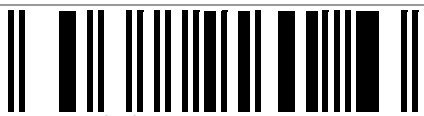
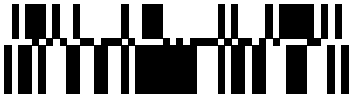
EAN 13 with 2 digits add-on Valid characters: “0”..”9” Check digit method: Check digit included in the code Default: -	
Notes:	Same as EAN13, but with 2 add-on digits enclosed.
EAN 13 with 5 digits add-on Valid characters: “0”..”9” Check digit method: Check digit included in the code Default: -	
Notes:	Same as EAN13, but with 5 add-on digits enclosed.
UPC version A Valid characters: “0”..”9”, 11 digits + 1 Check digit Check digit method: Check digit included in the code Default: -	
Notes:	Check digit is automatically calculated if not in the input data (that is when only 11 digits are used for creating the code). Used for article bar coding.
UPC version A, 2 digits add-on Valid characters: “0”..”9” Check digit method: Check digit included in the code Default: -	
Notes:	Same as UPC version A, but with 2 add-on digits enclosed.
UPC version A, 5 digits add-on Valid characters: “0”..”9” Check digit method: Check digit included in the code Default: -	
Notes:	Same as UPC version A, but with 5 add-on digits enclosed.
UPC version E Valid characters: “0”..”9”, 7 digits + 1 Check digit Check digit method: Check digit included in the code Default: -	
Notes:	Check digit is created automatically when not committed in the input data (that is when only 7 digits are used for creating the code). Used for article bar coding. Code must begin with “0” or “1”.
UPC version E, 2 digits add-on Valid digits: “0”..”9” Check digit method: Check digit included in the code Default: -	
Notes:	Same as UPC version E, but with 2 add-on digits enclosed.
UPC version E, 5 digits add-on Valid digits: “0”..”9” Check digit method: Check digit included in the code	

Default:	-	
Notes:	Same as UPC version E, but with 5 add-on digits enclosed.	
UCC / EAN-128 (GS-1) Valid characters: Check digit method: Default:	 ASCII characters between 0..127 Check digit included in the code -	 ABCabc-/+
Notes:	Standardized version of Code 128.	
SSCC18 Valid characters: Check digit method: Default:	 ASCII-characters between 0..127 Check digit included in the code -	 (00)390123451234567890
Notes:	Special edition of EAN128	
MSI Valid characters: Check digit methods: Default:	 “0”..”9” Not implemented No check digit	Supported, but without check digits
Notes:		
USPS Postnet 5 Valid characters: Check digit method: Default:	 “0”..”9”, 5 digits + 1 Check digit Check digit included in the code -	 123455
Notes:	Check digit is calculated automatically if not posted in the input data (that is when only 5 digits are used for creating the code). Used for postal purposes.	
USPS Postnet 9 Valid characters: Check digit method: Default:	 “0”..”9”, 9 digits + 1 Check digit Check digit included in the code -	 1234567895
Notes:	Check digit is calculated automatically if not posted in the input data (that is when only 9 digits are used for creating the code). Used for postal purposes.	
Flattermarken / OMR Valid characters: Check digit method: Default:	 “0”..”9”, 9 digits specifying the position of the bars none -	
Notes:	For correct recognition of crease-bents.	

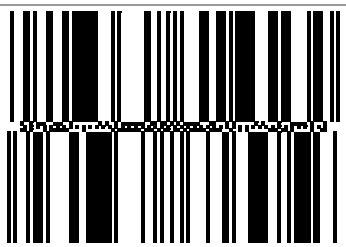
22.2 Two Dimensional Bar Codes (2D)

MaxiCode (2D Symbology) Valid characters: Check digit method: Mode:	 Alphanumeric and/or numeric Check digit and error correction included in the code Mode-4 (standard symbol)
Notes:	Used by UPS. Modes for including of postal information (SCM) can be adjusted. Printing size is set to a norm value.
PDF417 & PDF417 Truncated (2D Symbology) Valid characters: Check digit method:	 alphanumeric and/or bytes check digit and error correction included in the code
Notes:	2D symbology (multi-row) to encode larger quantities of data. Data representation is divided into rows and columns that adjust automatically (depending on input data) or can be set by printer commands. Also available as truncated version: PDF417 Truncated
Data Matrix (2D Symbology) Valid characters: Check digit method:	 alphanumeric and/or bytes check digit and error correction included in the code
Notes:	2D symbology to encode larger quantities of data. Size adjusts automatically depending on input data or can be set by printer commands.
QR-Code (2D Symbology) Valid characters: Check digit method:	 alphanumeric and/or bytes, Kanji character set check digit and error correction included in the code
Notes:	2D symbology to encode larger quantities of data. Size adjusts automatically depending on input data or can be set by printer commands. Special Industry formats are supported.
Codablock F (2D Symbology) Valid characters: Check digit method: Print-Controls:	 ASCII 0-127 internal check digit method CBF
Notes:	“Stacked Code128” symbology, based upon Code 128 char set. Each row is a single Code 128 symbol extended with row indicator information and additional check digits. The UCC/EAN format indicator is supported.

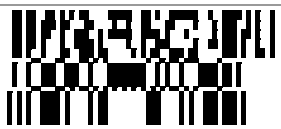
22.3 RSS Reduced Space Symbology

RSS-14 Valid characters: Check digit method: Print-Control:	 “0”..”9”, 13 digits + 1 check digit EAN 14 C=R	 (01)01234567890128
Encoded data:	01234567890128	
Notes:	Used to encode the GTIN (Global Trade Item Number) with AI “01“. The GTIN contains of a packaging indicator (0..9) followed by a 12 digit number (taken from the EAN-13 article number system) followed by a check digit. The check digit is calculated automatically. The height of the symbol should be at least 33X to support Omni directional scanning (X…module width). No quiet zone is needed.	
RSS-14 Truncated Valid characters: Check digit method: Print-Control:	 “0”..”9”, 13 digits + 1 check digit EAN 14 C=RT	 (01)01234567890128
Encoded data:	01234567890128	
Notes:	Similar to RSS-14 but height should be at least 13X (Omni-directional scanning may not be possible).	
RSS Expanded Valid characters: Check digit method: Default; Print-Control:	 “A”..”Z”, “a”..”z”, “0”..”9” + ISO 646 char set Mod10 No check digit C=RE	 ABab+
Encoded data:	ABab+	
Notes:	Variable length symbology; Encodes up to 74 numeric or 41 alphabetic; Omni-directional scanning is possible; No quiet zone is needed.	
RSS Limited Valid characters: Check digit method: Default; Print-Control:	 “0”..”9”, 13 digits + 1 check digit EAN-14 Check digit included in input data C=RL	 (01)01234567890128
Encoded data:	ABab+	
Notes:	Similar to RSS-14 but smaller in size and limited to packaging indicator 0 and 1 (first digit). No quiet zone is needed.	
RSS 14 Stacked[12] Valid characters: Check digit method: Default: Print-Control:	 “0”..”9”, 13 digits + 1 check digit EAN14 Check digit included in input data C=RS	
Encoded data:	1234567890123	
Notes:	Similar to RSS-14 but split into 2 rows to make the symbol smaller. Used for pharmaceutical packaging. No quiet zone is needed.	

[12] Needs 2D License

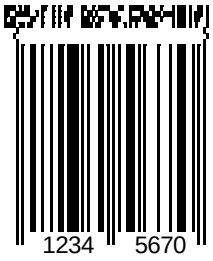
RSS-14 Stacked Omni directional[13] Valid characters: “0”..”9”, 13 digits + 1 check digit Check digit method: EAN14 Default: No check digit Print-Control: C=RO	
Encoded data:	1234567890123
Notes:	This version of RSS-14 Stacked supports Omni-directional scanning.
RSS Expanded Stacked[14] Valid characters: “A”..”Z”, “a”..”z”, “0”..”9” + ISO 646 char set Check digit method: Modulo10 Default: No check digit Print-Control: C=RX	
Encoded data:	1234567890Az+
Notes:	Stacked version of RSS Expanded. The number of data segments per row can vary between 4 and 22. Default segmentation is 4.

22.4 EAN.UCC Composite Symbology[15]

RSS-14 Composite Symbology Valid characters RSS-14: “0”..”9”, 13 digits + 1 check digit Valid characters CC-A/B: ISO 646 character set, up to 338 characters Check digit method: EAN 14 Print-Control: C=R,CC=D	 (01)12345678901231
Encoded data:	1234567890123|TEC-IT
Notes:	RSS-14 barcode with an attached 2D component (CC-A or CC-B). The vertical bar “|” character is used to separate the data between linear symbol and 2D composite component.
RSS-14 Truncated Composite Symbology Valid characters RSS-14: “0”..”9”, 13 digits + 1 check digit Valid characters CC-A/B: ISO 646 character set, up to 338 characters Check digit method: EAN 14 Print-Control: C=RT,CC=D	 (01)12345678901231
Encoded data:	1234567890123|TEC-IT
Notes:	RSS-14 Truncated barcode with an attached 2D component (CC-A or CC-B). The vertical bar “|” character is used to separate the data between linear symbol and 2D composite component.
RSS-14 Stacked Composite Symbology Valid characters RSS-14: “0”..”9”, 13 digits + 1 check digit Valid characters CC-A/B: ISO 646 character set, up to 338 characters Check digit method: EAN 14 Print-Control: C=RS,CC=D	

[13] Needs 2D License
[14] Needs 2D License
[15] All variants of the Composite Symbology needs a 2D License

Encoded data:	1234567890123|TEC-IT
Notes:	RSS-14 Stacked barcode with an attached 2D component (CC-A or CC-B). The vertical bar "|" character is used to separate the data between linear symbol and 2D composite component.
RSS-14 Stacked Omni directional Composite Symbology Valid characters RSS-14: Valid characters CC-A/B: Check digit method: Print-Control:	 "0".."9", 13 digits + 1 check digit ISO 646 character set, up to 338 characters EAN 14 C=RO,CC=D
Encoded data:	1234567890123|TEC-IT
Notes:	RSS-14 Stacked Omni directional barcode with an attached 2D component (CC-A or CC-B). The vertical bar "|" character is used to separate the data between linear symbol and 2D composite component.
RSS Expanded Composite Symbology Valid characters RSS Exp.: Valid characters CC-A/B: Check digit method: Default: Print-Control:	 ISO 646 character set ISO 646 character set, up to 338 characters Modulo10 No check digit C=RE,CC=D
Encoded data:	1234567890123|TEC-IT
Notes:	RSS Expanded bar code with an attached 2D component (CC-A or CC-B). The vertical bar "|" character is used to separate the data between linear symbol and 2D composite component.
RSS Expanded Stacked Composite Symbology Valid characters RSS ES: Valid characters CC-A/B: Check digit method: Default: Print-Control:	 ISO 646 character set ISO 646 character set, up to 338 charcters Modulo10 No check digit C=RX,CC=D
Encoded data:	ABCabc123+|TEC-IT
Notes:	RSS Expanded Stacked bar code with an attached 2D component (CC-A or CC-B). The vertical bar "|" character is used to separate the data between linear symbol and 2D composite component.
RSS Limited Composite Symbology Valid characters RSS Lim.: Valid characters CC-A/B: Check digit method: Default: Print-Control:	 "0".."9", 13 digits + 1 check digit ISO 646 character set, up to 338 characters EAN 14 No check digit C=RL,CC=D
Encoded data:	1234567890123|TEC-IT
Notes:	RSS Limited barcode with an attached 2D component (CC-A or CC-B). The vertical bar "|" character is used to separate the data between linear symbol and 2D composite component.
UCC/EAN128 Composite Symbology Valid characters EAN 128: Valid characters CC-A/B/C:	 ASCII-characters between 0..127 ISO 646 character set, up to 2361 characters

Check digit method: Default: Print-Control:	Code128, Modulo10 No check digit C=E128,CC=D	
Encoded data:	1234567890|TEC-IT	
Notes:	EAN128 barcode with an attached 2D component (CC-A, CC-B or CC-C). The vertical bar "|" character is used to separate the data between linear symbol and 2D composite component.	
EAN-8 Composite Symbology Valid characters EAN 8: Valid characters CC-A/B: Check digit method: Print-Controls:	 "0".."9", 7 digits + 1 check digit ISO 646 character set, up to 338 characters Check digit included in the code C=E8,CC=D	
Encoded data:	1234567|TEC-IT	
Notes:	EAN-8 barcode with an attached 2D component (CC-A or CC-B). The vertical bar "|" character is used to separate the data between linear symbol and 2D composite component	
EAN-13 Composite Symbology Valid characters EAN 13: Valid characters CC-A/B: Check digit method: Print-Control:	 "0"."9", 12 digits + 1 check digit ISO 646 character set, up to 338 characters Check digit included in the code C=E13,CC=D	
Encoded data:	123456789012|TEC-IT	
Notes:	EAN-13 barcode with an attached 2D component (CC-A or CC-B). The vertical bar "|" character is used to separate the data between linear symbol and 2D composite component.	
UPC-A Composite Symbology Valid characters UPC-A: Valid characters CC-A/B: Check digit method: Print-Control:	 "0"."9", 11 digits + 1 check digit ISO 646 character set, up to 338 characters Check digit included in the code C= UA,CC=D	
Encoded data:	12345678901|TEC-IT	
Notes:	UPC-A barcode with an attached 2D component (CC-A or CC-B). The vertical bar "|" character is used to separate the data between linear symbol and 2D composite component.	
UPC-E Composite Symbology Valid characters UPC-A: Valid characters CC-A/B: Check digit method: Print-Control:	 "0"."9", 7 digits + 1 check digit ISO 646 character set, up to 338 characters Check digit included in the code C= UCE,CC=D	
Encoded data:	1234567|TEC-IT	

Notes:	UPC-E barcode with an attached 2D component (CC-A or CC-B). The vertical bar "|" character is used to separate the data between linear symbol and 2D composite component.

Table 39: Supported Barcodes

23 Version Information

Version	Notes
V1.03	Start of version history. The following features were not implemented: Barcode types UPC version D1 to D5 Selection of the font–width when printing human readable text Calculation of the Check digit for Code 93 Extended (Print-Control: 8; String: 93E) Barcode type MSI (Print-Control: 28; String: MSI) Calculation of the Check digit for barcode type MSI
V2.01	The following features were added: New supported barcodes: PDF417, PDF417 Truncated, Code128, Postnet, MaxiCode Barcode type MSI (Print-Control: 28; string: MSI) – but currently without check digits Calculation of the check digit for Code 93 Extended (Print-Control: 8; string: 93E) Currently not implemented (but available in later versions): Print-Controls for Data Matrix Print-Controls for SCM- modes of MaxiCode
V2.02	The following features were added: New supported barcode: Data Matrix The module width of bars and spaces is now adjustable in absolute units [mms/1000]. In previous versions the width was only adjustable in [pixels] - therefore the barcode width depended on the printer resolution. Also a default value for the module width can now be set in the barcode.ini file (setting: `DefModWidth`). Enhanced debugging features (e. g. sending a Print-Control - `barcode.ini` setting `BCText`). Errors in the barcode (wrong Print-Control, wrong barcode data) can be made visible on the printed document (`barcode.ini` setting: `OnError`). Better verification of syntax errors in Print-Controls Symbol specific parameters for PDF417, MaxiCode and Data Matrix are supported now (e.g. EC-Level, Structured Append,...). Bug Fix: A printing problem occurred always if the barcode data contained a comma (e.g. "123,45A")
V4.0	The following features were added: New supported barcode: QR-Code Row/Column Ratio for PDF417 adjustable (used by some industry label specifications).
V4.1.1.15	The following features were added: New supported barcodes: German Postal Codes, Australian Custom Codes Support for specific bar code default values, which are also used by customary hardware extensions (barcode.ini parameter: `DefBarSIMMType`) Bug Fix: Data Matrix encoding error if uneven number of digits encoded.
V4.1.1.17	Bug Fix: Check digit calculation (e.g.: Modulo10 for 2of5IL) couldn't be activated via Print-Control P.
V4.1.1.18	The following features were added: Print-Control A=2 for printing human readable text above the symbol Bug Fixes: Wrong Code 39 check digit Exception when using FNC1 (Print-Control %).
V4.1.1.19	Bug Fix: If the barcode.ini file can't be found in the application path of SAPlpd.exe (but in Win-NT directory or not available), the default module width was zero (instead of 0.5 mm).
V4.1.0.20	The following features were added: Adjusting of Default Guard Bar Width (barcode.ini); can help with problems with specific printer drivers (which don't print without horizontal line).

V5.0.0.21	The following features were added: Symbologies Codablock F, Pharmacode 1+2 Spur, RSS-14, Flattermarken Setup of font characteristics for EAN/UPC barcodes through `barcode.ini` file parameters. New Print-Controls: W=Bar Width Reduction; T=Text Alignment Bug Fixes: 2D Symbologies (PDF417): the symbol height was influenced by the text flag (Print-Control A=1) BarSIMM-compatibility for PDF417 was improved (Default X/Y Ratio)
V5.1.0.23	New: New Print-Controls: FN, FS, FW for individual barcode fonts Default setting of font characteristics in the barcode.ini file
V5.1.0.24	New: Default Property „OptResolution“ in the barcode.ini is now possible. OptResolution enhances the readability of the barcode for low print resolution problems.
V5.1.1.25	Bug Fixes: An error with the selection of the default check digit was eliminated.(occurred e.g. in CodaBar 2 Width).
V5.1.1.26	New: The `barcode.ini` settings are displayed in the `barcode.log` file now.
V6.0.0.27	New: • RSS - Reduced Space Symbology (all sub variants) • EAN UCC Composite Symbology (all sub variants) • MicroPDF417 • Enhanced error messages with indication of non-code-able characters • Demo text instead of horizontal line in unlicensed mode. • Shift parameter (barcode.ini) for vertical baseline adjustment • Print control parameter M for convenient module width adjustment • Tested SAPsprint and SAPWIN.dll support (access method G) • Bar code generator is based on new TBarCodeLib V6
V6.0.2.32	New: • The Barcode DLL uses the latest Barcode Engine (TBarCode Library V7) • The precision of the drawing routines was enhanced (again). • Printer driver problems can be solved better now (barcode.ini: GDIRect). Bug Fixes: • An error with product licensing was fixed. Sometimes „Demo“ was printed in the bar code. This error occurred exclusively with parallel processing of print jobs in SAPsprint (Multi-Threading Problem). • Unexpected error messages in the SAPsprint/SAPlpd Logfile in spite of working bar code generation. The inconsistent evaluation of return codes is the reason (full details see below): o API function BarcodeInit(): SAPlpd and SAPsprint expect in the latest implementation a return code unequal to 0 (=true). To avoid misleading error log messages we changed our implementation to correspond with this return code - in spite of the fact that the SAP Interface Specification requires a return code of 0. o API function BarcodePrint(): SAPsprint expects in the latest available version (v1.0.1.1+) a return value of 0 (now supplied by our DLL). This conforms with SAP Interface Specification. *Some previous SAPsprint-Versions expect a return code unequal to 0 (true), producing unwanted log file error messages.* Contrary to the Interface Specification SAPlpd expect always a return code unequal to 0 (true), this is now supplied by our DLL.

Table 40: Version Information

24 Appendix

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25 Contact and Support Information

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