

TBarCode/SAPwin

Barcode DLL for SAPSprint, SAPFprint (SAP GUI) and WWI

Version 11.2

8 October 2026

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1 Content

1 Content 2
1.1 Index of Figures 4
1.2 Index of Tables 5

2 Disclaimer 7

3 About TBarCode/SAPwin 8
3.1 Introduction 8
3.2 Linear and 2D Symbologies 8
3.3 Crystal-Clear Barcode Quality 8
3.4 Supported Operating Systems & SAP components 9

4 Installation 10
4.1 Installation Steps 10
4.2 System Requirements 10

5 Install TBarCode/SAPwin 11
5.1 SAPSprint, SAP GUI or WWI 11
5.1.1 SAPSprint – SAP Print Service 11
5.1.2 SAP GUI (SAPFprint) – Front-End Printing 11
5.1.3 SAPlpd 11
5.1.4 EH&S WWI 11
5.2 TBarCode/SAPwin Setup 12
5.2.1 Installation for SAPSprint (32-Bit and 64-Bit) 12
5.2.2 Installation for SAP GUI 12
5.2.3 Installation for WWI 12
5.3 Next step 13

6 Create a Device Type Copy 14
6.1 Copy a device type 14
6.2 Next step 15

7 Assign the Device Type to a Printer 16
7.1 Output Device Settings 16
7.1.1 Device Attributes 17
7.1.2 Hostspool Access Method 17
7.2 Next step 18

8 Define Printer Barcodes 19
8.1 Adding new Printer Barcodes 19
8.1.1 Adding a new Printer-Barcode 21
8.2 Modifying Print Controls 21

9 Test Barcode Printing 23
9.1 SAP R/3 23
9.2 SAP ERP / ECC 6.0 23

10 Obtain a License 24
10.1 Product Variants 24
10.2 License Key and License Types 24
10.3 License File Barcode.ini 25

11 Using Barcodes in SAP 26
11.1 SAPscript 26
11.1.1 Using Character Formats for Bar-coding (recommended) 26
11.1.1.1 Example 26
11.1.2 Direct Use of Barcode-Print Controls in SAPscript (not recommended) 27
11.2 SmartForms 28
11.2.1 Using Styles for Bar-coding 28
11.2.2 Style definition 28
11.3 ABAP 30
11.3.1 Sample ABAP Program 30

12 Introduction to Print Controls 31
12.1 Usage 31
12.1.1 System-Barcodes 31
12.1.2 Printer-Barcodes 31
12.1.3 Print Controls 31
12.2 Add new Print Controls 31
12.2.1 New System Barcode 31
12.2.2 New Printer Barcode 33
12.3 Modify existing Print Controls 33

13 Barcode Print Control Reference 34
13.1 Syntax and Structure of Print Controls 34
13.1.1 Naming Convention 34
13.1.2 Print Control Prefix 34
13.1.3 Print Control-Suffix 35
13.2 Print Control Parameters 35
13.2.1 Barcode Type 35
13.2.2 Barcode Data, Encoding 38
13.2.3 Barcode Size 40
13.2.4 Position, Orientation, Origin 42
13.2.5 Human Readable Text 42
13.2.6 Parameters specific for Aztec Code 42
13.2.7 Parameters specific for Data Matrix 43
13.2.8 Parameters specific for MaxiCode 44
13.2.9 Parameters specific for PDF417 45
13.2.10 Parameters specific for MicroPDF417 46
13.2.11 Parameters specific for QR-Code 46
13.2.12 Parameters specific for Micro QR-Code 47
13.2.13 Parameters for Codablock F 48
13.2.14 GS1 DataBar Expanded Stacked specific Parameter 48
13.2.15 GS1 Composite Symbology Parameter 48

14 Encoding Special Characters 49
14.1.1 Implemented Escape Sequences 49
14.1.2 Symbology dependent control characters 49

15 OMS Integration with OMSPRINT 51
15.1 Installation and Usage 51

16 BarCode.ini Configuration File 52
16.1 Search Path 52
16.2 Section [LICENSE_DATA] 52
16.3 Section [SETTINGS] 52
16.3.1 Default Font 54
16.3.2 Character Encoding / Code Pages 55
16.4 Section [EAN_UPC] 56
16.5 Section [LOG] 56
16.5.1 Log File Path: 57
16.6 Section [DEBUG] 57

17 Hex – ASCII Conversion Table 58

18 Predefined System-Barcodes 59

19 Printer Barcodes 60

20 Data Flow when using SWIN Device Type 61

21 DefaultSet Values 62

22 2D Symbol Sizes 64
22.1 Aztec Code Symbol Sizes 64
22.2 Data Matrix Symbol Sizes 64
22.3 QR-Code Symbol Sizes (Versions) 65
22.4 Micro QR-Code Symbol Sizes (Versions) 65
22.5 MicroPDF Symbol Sizes (Versions) 66

23 Troubleshooting & FAQ 67
23.1 TEC-IT.COM FAQ Area 67
23.2 How Can I Verify if TBarCode/SAPwin Was Installed Correctly? 67
23.2.1 SAPSprint, SAP GUI 67
23.2.2 Check List 67
23.3 How Can I Turn On Logging for Trouble-Shooting? 67
23.3.1 TBarCode/SAPwin Log File “barcode.log” 67
23.3.2 SAPSprint Log Files 68
23.3.3 Test Tool (SAP spool error log) 69
23.4 No Bar Codes Are Printed 69
23.4.1 Wrong Host Spool Access Method 69
23.4.2 Incompatible Printer Driver 70
23.4.3 Wrong Device Type 70
23.4.4 Wrong Variant of Print Control Prefix 70
23.4.5 Missing Visual Studio Runtime DLLs on the Target System 70
23.5 I Added a New Print Control, but SAP Could Not Find It 71
23.6 I Can’t Define a Print Control With Variant 5 (SE73 Shows Variant 1) 71
23.7 Barcode Type is Always 2 of 5 Interleaved 71
23.7.1 Wrong base device type 71
23.7.2 LOCL-Printer 71

23.8 Wrong Barcode Data / Wrong Output 71
23.9 Barcode Error Messages While Printing 72
23.10 Unwanted Characters Are Printed After or Beside the Barcode 72
23.11 How Can I Achieve Similar Results as With Barcode DIMM/SIMM Printer Extensions? 73
23.12 I Am Using WAS and Try to Print “SAPSCRIPT-BARCODETEST,” but Some Barcodes Are Missing 73
23.13 How Can I Create a Silent Setup for Deployment in My Company? 73
23.14 Why Is a Horizontal Bar Drawn Across the Barcodes? 74
23.15 Testing Tray Selection and Print Mode Selection 74
23.16 The Wrong Paper Tray is Used 74
23.16.1 Problem 74
23.16.2 Solutions 74
23.17 No Frontend Printing Possible With SAPSprint 74
23.18 How to Encode More Than 70 Characters in a 2D Barcode? 75
23.19 How Can I Encode “Flattermarken” Alias “OMR”? 75
23.20 How to Change the Vertical Alignment of the Barcodes? 75
23.20.1 Solution 75
23.21 How Can I Adjust the Barcode Width? 76
23.22 How Can I Use GS1 Application Identifiers (FNC1)? 76
23.22.1 Sample GS1-128 prefix 77
23.22.2 Encoding Examples 77
23.23 I Get the Error Message "Service 515 in Use" 77
23.24 Is It Possible to Use the Same Output Device in SAP for All Users? 78
23.24.1 Local and Central printing 78
23.24.1.1 Local printing 78
23.24.1.2 Central printing 78
23.24.2 List printing 78
23.25 How to Retrieve the System ID? 79
23.26 How to License the Product in "barcode.ini"? 79

24 Supported Barcodes 80
24.1 Linear Bar Codes (1D) 80
24.2 Postal Codes (1D) 81
24.3 Two-Dimensional Codes (2D Barcodes) 82
24.4 HIBC Barcodes 82
24.5 GS1 Composite Variants (2D Codes) 82
24.6 Related Symbologies 83

25 Version Information 84

26 Contact and Support Information 85

1.1 Index of Figures

Figure 1: Invoke „Copy Device Type“ 14

Figure 2: Copy Device Type 14

Figure 3: Create Object Directory Entry 15

Figure 4: Spool Administration: Initial Screen 16

Figure 5: Spool Administration: Change Output Device 17

Figure 6: Spool Administration: Change Output Device (Access Method) 17

Figure 7: SAPscript Font Maintenance: Initial Screen 19

Figure 8: SAPscript Font Maintenance: Device Types 19

Figure 9: SAPscript Font Maintenance: Change Printer Barcodes 20

Figure 10: Assign Print Control Prefix / Suffix 20

Figure 12: Print Control Maintenance 22

Figure 13: Print Control Maintenance - Detail 22

Figure 14: SAPscript and Barcode-printing 26

Figure 15: Character Format Definition in a SAPscript form 26

Figure 16: Sample SAPscript 27

Figure 17: SmartForms Barcode Printing - Editor 1 28

Figure 18: SmartForms Barcode Printing - Editor 2 28

Figure 19: SmartForms Style 29

Figure 20: Style Definition – new Character Format 29

Figure 21: Style Definition – Bar Code Character Format 30
Figure 23: Confirmation Dialog: Prompt for Workbench request 32
Figure 24: Data Flow SWIN Device Type 61
Figure 25: BarCode.log 68
Figure 26: SPAD Test tool (Logging the first 100 KB) 69
Figure 27: SPAD Test tool (Logging the first 100 KB) 69
Figure 28: SPAD Test tool (Logging the first 100 KB) 69
Figure 29: Print Control Settings 70
Figure 30: Correct Print Control Definition of SBS01 72
Figure 31: Correct Print Control Definition of SBS01 – Font Maintenance 72
Figure 32: Barcode Printing Direction (adjusted in Barcode.ini) 76

1.2 Index of Tables

Table 1: Basic Workflow for Printing Barcodes 10
Table 2: System Requirements 10
Table 3: Copy Device Type 15
Table 4: Output Device Field Values 17
Table 5: Output Device Host Spool Access Method 18
Table 6: Printer-Barcodes Field Values 21
Table 7: Product Variants 24
Table 8: License Variants 24
Table 9: System Barcode Field Values 32
Table 10: Syntax of Print Control Prefix/Suffix 34
Table 11: Syntax Print Control-Suffix 35
Table 12: Barcode Type Print Control Parameters 37
Table 13: Barcode Data / Encoding Print Control Parameters 40
Table 14: Barcode Size Print Control Parameters 42
Table 15: Barcode Position, Orientation, Origin Print Control Parameters 42
Table 16: Human Readable Text Print Control Parameters 42
Table 17: Aztec Code Print Control Parameters 43
Table 18: Data Matrix Print Control Parameters 44
Table 19: MaxiCode Print Control Parameters 45
Table 20: PDF417 Print Control Parameters 46
Table 21: MicroPDF417 Print Control Parameters 46
Table 22: QR-Code Print Control Parameters 47
Table 23: Micro QR-Code Print Control Parameters 48
Table 24: Codablock-F Print Control Parameters 48
Table 25: RSS Expanded Stacked Print Control Parameters 48
Table 26: GS1 Composite Symbology Print Control Parameters 48
Table 27: Escape Sequences 49
Table 28: Barcode-specific Control Sequences 50
Table 29: Barcode-Ini Default Location 52
Table 30: Barcode-Ini Section LICENSE_DATA 52

Table 31: Barcode-Ini Section SETTINGS (part 1) 54
Table 32: Barcode-Ini Section SETTINGS (part 2) 54
Table 33: Barcode-Ini Section SETTINGS (part 3) 56
Table 34: Barcode-Ini Section EAN_UPC 56
Table 35: Barcode.ini Section LOG 56
Table 36: Barcode-Ini Section DEBUG 57
Table 37: ASCII-HEX Conversion 58
Table 38: Predefined System Barcodes 59
Table 39: Predefined Print Controls (Printer Barcodes) 60
Table 40: DefaultSet Values 63
Table 41: Aztec Code Symbol Sizes 64
Table 42: Data Matrix Symbol Sizes 65
Table 43: QR-Code Symbol Sizes 65
Table 44: Micro QR-Code Symbol Sizes 65
Table 45: MicroPDF Symbol Sizes 66
Table 46: Flattermarken Sample (part 1) 75
Table 47: Flattermarken Sample (part 2) 75
Table 48: GS1-128 Sample (part 1) 77
Table 49: GS1-128 Sample (part 2) 77
Table 50: GS1-128 Sample (part 3) 77
Table 51: Supported Linear (1D) Bar Codes 81
Table 52: Supported Postal Barcodes (1D) 82
Table 53: Supported Two-Dimensional Codes (2D) 82
Table 54: Supported HIBC Bar Codes 82
Table 55: Supported Composite Codes (2D) 83

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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 is available as „Barcode-DLL“ for SAPSprint, SAP GUI (sapwin.dll) and WWI. You can use it server side or client side.

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 SAPsprint, WWI and Windows SAP GUI.

3.2 Linear and 2D Symbologies

Beside linear barcodes (e. g. 2of5 Interleaved, Code 39, Code 128, GS1-128, EAN, UPC, GS1 DataBar…) *TBarCode/SAPwin* supports also 2D and Multi-Row symbologies like:

- Aztec Code
- Codablock F (stacked Code128)
- Data Matrix + GS1 Data Matrix
- GS1 Composite Symbology
- GS1 DataBar Stacked
- MaxiCode
- MicroPDF417
- Micro QR-Code
- PDF417 + PDF417 Truncated
- QR-Code

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)
- Bar width reduction (Pixel Shaving) for enlarging printing techniques
- Optimize bar width for actual printing resolution (OptResolution) - especially relevant for thermal transfer printers (203 dpi).
- Structured Append for 2D codes
- And many other parameters (see chapter 13 - Barcode Print Control Reference)

3.4 Supported Operating Systems & SAP components

- Bar code extension for SAPSprint, SAP GUI (SAPWIN.dll) and WWI 32-bit and 64-bit
- For SAPSprint V1.0.0.1 or higher
- For SAP GUI with SAPWIN.dll V1.0.0.6 or higher
- For SAP EH&S WWI SP31 or higher
- For Microsoft Windows 10 and 11, Server 2016 - 2022
- For SAP R/3 (2.2+) and all newer SAP systems (ECC and S/4HANA On-Premise)
- With SPAD Host Spool Access F/G, S/U in combination with all SAPWIN/SWIN/SWINCF based device types
- Barcode management through System-Barcodes, Printer Barcodes and Printcontrols.
- Suitable for SAPscript®, SmartForms® and ABAP®
- With Unicode interface (SAPSprint 730 Patch 16 / SAP GUI 730 Patch 10 or higher)
- The data sheet for the actual version can be found here.

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 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.

➢ Our support will help you in case of questions - please send an email to sap@tec-it.com.

4.2 System Requirements

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

TBarCode/SAPwin is available as Barcode-DLL[1] and can be used with SAPSprint and SAP GUI for Windows (SAPFprint), but also OMSPRINT and WWI[2] support the Barcode DLL interface.

Supported Platforms (only SAP-client or print-server platforms are relevant)	Microsoft® Windows 10-11, Server 2016 - 2022. 32 Bit and x64 systems (64 Bit) are supported. Client as well as server-operating systems are supported
SAP	SAPSprint V1.0.0.1 or higher SAP GUI with SAPwin.dll V 1.0.0.6 or higher WWI SP31 (WwiBC.dll) or higher
Host Spool Access Method	F or G with SAP GUI, S or U with SAPSprint
More information	The data sheet for the actual version can be found here.

Table 2: System Requirements

[1] 32 Bit Windows DLL (the 64 Bit version is available as Barcode64.dll starting with V10.0.2)
[2] WWI with SP31+

5 Install TBarCode/SAPwin

5.1 SAPSprint, SAP GUI or WWI

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

5.1.1 SAPSprint – SAP Print Service

SAPSprint is a tool for server based printing under Windows (access method „S“ and „U“). It is the successor of SAPlpd and can be installed as Service. Thus it offers more stability by automatic restart on errors.

SAPSprint uses the SAPWIN DLL for processing the SAPWIN print data stream. This DLL offers an interface for a Barcode DLL.

➢ For details see SAP Note 894444 - Tool for server-based printing on Windows (SAPSprint).

5.1.2 SAP GUI (SAPFprint) – Front-End Printing

In newer SAP client versions SAPFprint and the SAPWIN.DLL assume the preparation of the SAPWIN print data stream. The SAPWIN DLL has an interface for a Barcode DLL and is used with front-end printing through host spool access method „G“ („Control Technology“).

➢ For details see SAP Note 821519 - Front-end printing with control technology.

5.1.3 SAPlpd

➢ SAPlpd is outdated and should be replaced by SAPSprint (server side) or SAPFprint / SAP GUI 7.20+ (client side).

5.1.4 EH&S WWI

Starting with EH&S WWI SP31 the WwiBC.dll controls bar code generation. The WwiBC.dll offers an interface for a Barcode DLL, which enables the usage of TBarCode/SAPwin.

➢ For details see SAP Note 1293379 - EH&S WWI: Bar code support.

5.2 TBarCode/SAPwin Setup

This installation guide assumes that the SAP Print Service, SAP GUI or WWI service is already installed on the client computer 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.
- In order to gain more information about installing SAPSprint, SAP GUI or WWI please refer to the appropriate SAP®-documentation.

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

5.2.1 Installation for SAPSprint (32-Bit and 64-Bit)

1. Download the latest version of *TBarCode/SAPwin* from https://www.tec-it.com
2. Start the setup program
3. Confirm all dialog boxes with `Next` and accept the license agreement.
4. Configure your installation options in the menu „Options“ – usually you don’t need to change the settings.
   - With the “Determine destination folder automatically” option, the installation path of SAPSprint will be detected automatically from the registry. If not found, the location defaults to the program files folder (TEC-IT\TBarCode SAPwin directory).
   - If you want to change the installation path, uncheck the option for the automatic destination folder and browse to the location of SAPSprint.exe.
5. The setup of *TBarCode/SAPwin* is completed.

- For the 32-bit version of SAPSprint keep the option “Install 32-Bit version” enabled.

5.2.2 Installation for SAP GUI

1. Download the latest version of *TBarCode/SAPwin* from https://www.tec-it.com
2. Start the setup program
3. Confirm all dialog boxes with `Next` and read (and accept) the license agreement.
4. Configure your installation options in the menu „Options“ – usually you don’t need to change the settings.
   - With the “Determine destination folder automatically” option, the installation path of SAP GUI will be detected automatically from the registry. If not found, the location defaults to the program files folder (TEC-IT TBarCode/SAPwin directory).
   - If SAPSprint is also installed on the target computer, but the installation is to be carried out explicitly for SAP GUI, you must adjust the installation path manually: Deactivate the option for the automatic destination folder and navigate to the SAP GUI location.
5. After completing the setup routine, restart SAP GUI (incl. Logon Pad) to make sure that the Barcode DLL and the Barcode.ini will be loaded.
6. The setup of *TBarCode/SAPwin* is completed.

- A „silent installation“ for automated deployment is possible (see 23.13).
- If you don’t install the Barcode DLL with the provided setup, please examine section 23.4.5.

5.2.3 Installation for WWI

1. Download the latest version of *TBarCode/SAPwin* from https://www.tec-it.com
2. Start the setup program
3. Confirm all dialog boxes with `Next` and read (and accept) the license agreement.
4. Configure your installation options in the menu „Options“:

- Disable the “Determine destination folder automatically” option since this option works only for SAPSprint and SAP GUI.
- Browse to your WWI installation directory (the location of the WwiBC.dll) and select this directory as the destination folder.

5. After completing the setup routine, restart the EH&S management server in the Windows Service Manager to ensure that the Barcode.dll and the Barcode.ini file are loaded.
6. The setup of *TBarCode/SAPwin* is completed.

5.3 Next step

Create a copy of a suitable device type (usually `SWIN`). Please 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. For that reason 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.

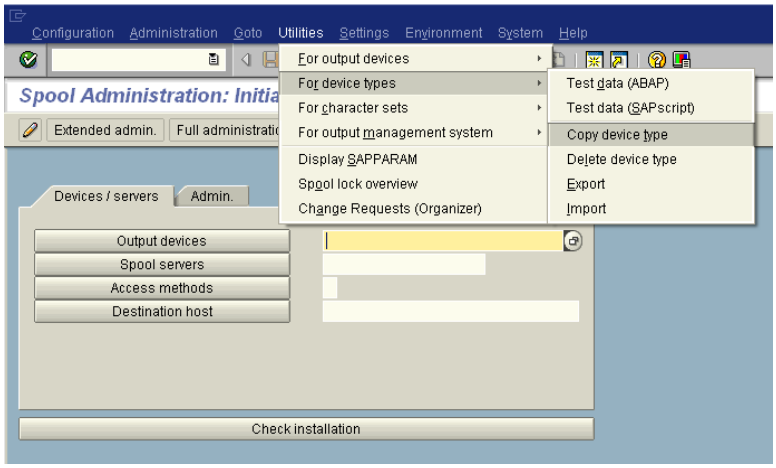


Figure 1: Invoke „Copy Device Type“

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.

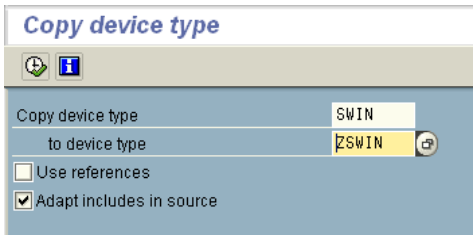


Figure 2: Copy Device Type

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	It is recommended to also uncheck this option.

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

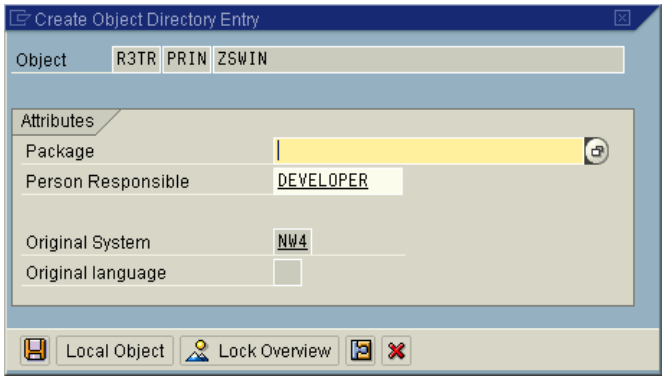


Figure 3: Create Object Directory Entry

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.`

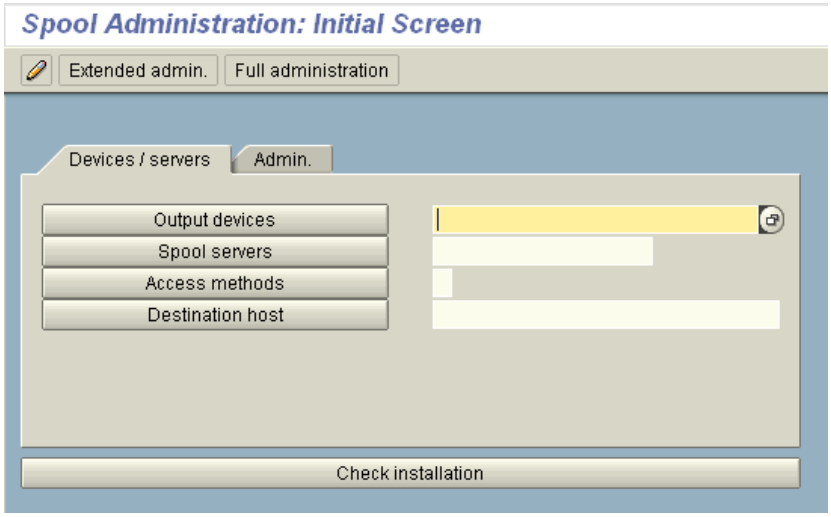
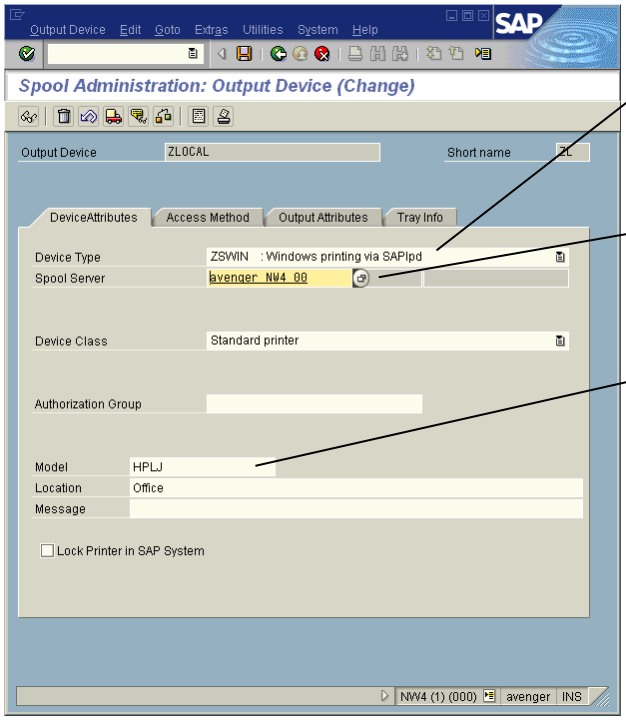


Figure 4: Spool Administration: Initial Screen

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



The device type for SAPSprint/SAP GUI printing, which has been previously copied or imported (e. g. `ZSWIN`).

Name of SAP server (only with host spool access method "`S`")

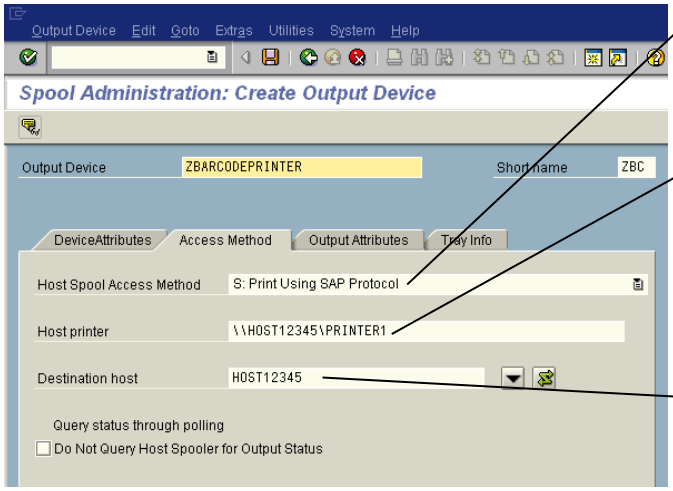
Model and Location (only for informative purposes)

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



„F“ for front end printing
“S” (or U) for server based printing
“G” for Control Technology (GUI)

The name of a shared network printer (needs Windows printer driver).
Frontend printing: `__DEFAULT` uses Windows Default Printer on client

Name of the system, where `SAPSprint` is installed (e.g. name of a print server) - available with Access method `S or U`

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 `SAPSprint`. Alternatively you can also use access method `U` (TBarCode/SAPwin was installed on the print server). ▪ Use access method `G` if you want to use front end printing with the new Control Technology (TBarCode/SAPwin was installed on the client).
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"` and `"U"` Name of the system (e.g. Print server or Spool server), where `SAPSprint` 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`

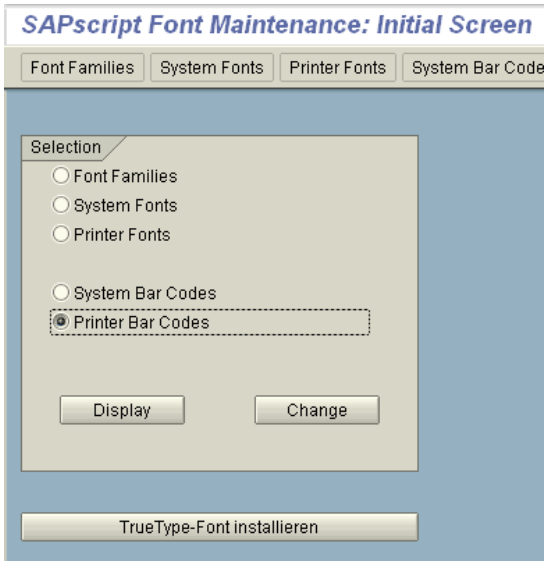


Figure 7: SAPscript Font Maintenance: Initial Screen

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

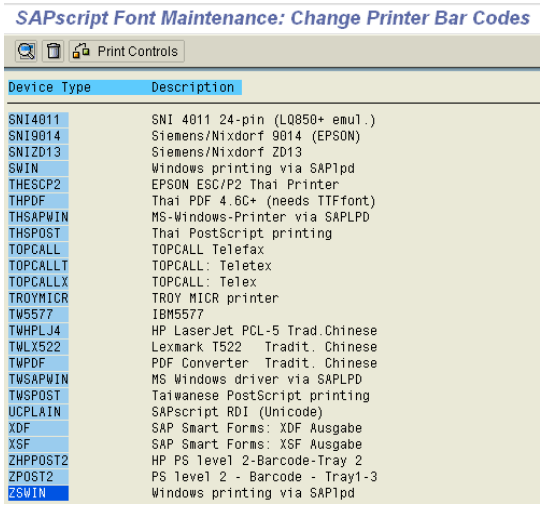


Figure 8: SAPscript Font Maintenance: Device Types

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.

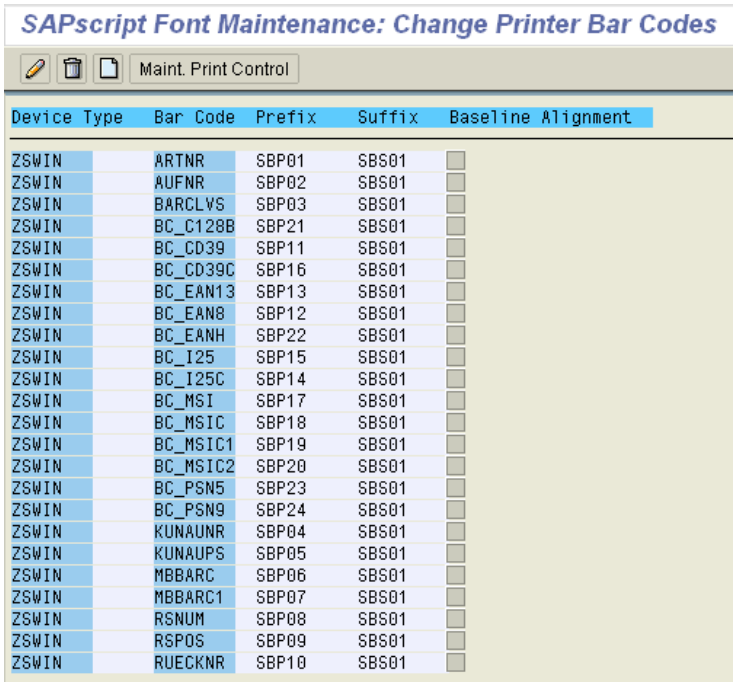


Figure 9: SAPscript Font Maintenance: Change Printer Barcodes

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

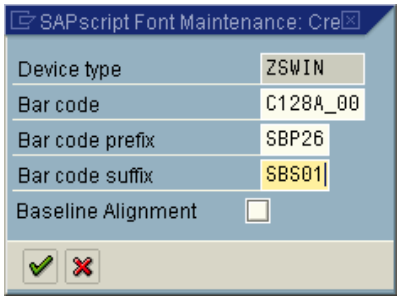


Figure 10: Assign Print Control Prefix / Suffix

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 it in 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.

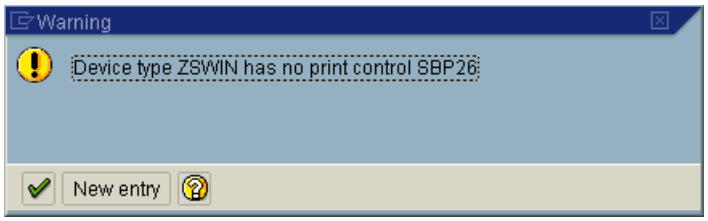


Figure 11: Adding a new Print Control Prefix (SE73)

- 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 23.4.4 - 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 (Introduction to 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

Select Printer Barcodes

Then select the device type, for which you want to change the print controls (e.g. . ZSWIN)

The next dialog allows you to adjust the Printer Barcodes for the selected device type.

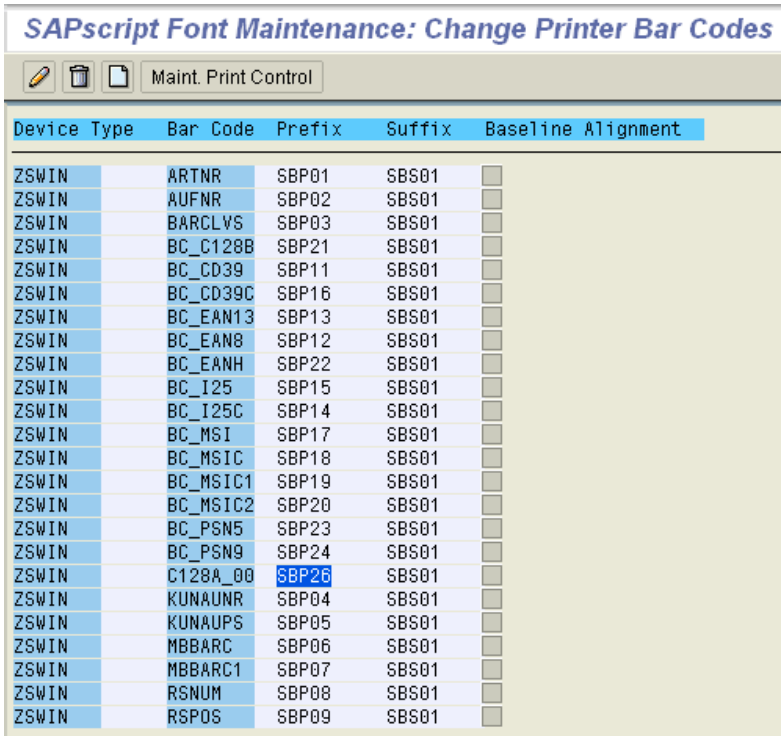


Figure 12: Print Control Maintenance

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

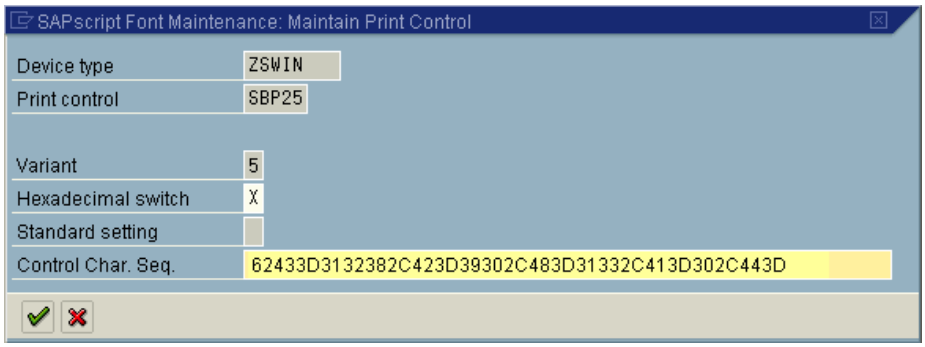


Figure 13: Print Control Maintenance - Detail

> ➢ Converting print controls from ASCII into hex codes is supported by the TEC-IT Software *Barcode Studio* (refer to **Fehler! Verweisquelle konnte nicht gefunden werden. Fehler! Verweisquelle konnte nicht gefunden werden.**).

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 (Introduction to Print Controls).

9 Test Barcode Printing

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

The following used SAPscript test document is based upon style S_TEST, which has all br codes defined as character format.

9.1 SAP R/3

SAP-systems are shipped with a predefined test document. It prints the most important bar codes (see 18- 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.

9.2 SAP ERP / ECC 6.0

If the SAPscript document "SAPSCRIPT-BARCODETEST" is not available in your ECC 6.0 system, you can request it as ITF file from our support: sap@tec-it.com.

Procedure for the rest as in 9.1

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 Code 128, Code 39, EAN, UPC, GS1-128, 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 ▪ Micro PDF417 ▪ Data Matrix ▪ MaxiCode ▪ QR-Code ▪ Micro QR-Code ▪ Codablock-F ▪ Aztec Code Also supported are: ▪ GS1 DataBar Stacked Variants ▪ GS1 Composite Symbology

Table 7: Product Variants

➢ The installation files (binary files) of the 1D and 2D version are always the same (only one setup program), but the 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 bar code for evaluation purposes (however you can request a temporary license key if necessary).

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 23.25- 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 below the common application data path:

Path Windows versions since Windows Vista:

```
C:\ProgramData\TEC-IT\TBarCode SAPwin\11
```

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).

- You have to restart SAPSprint, SAP GUI and WWI to reload *TBarCode/SAPwin*. The license file is only read once at startup.
- The demo restriction (horizontal demo bar or text) 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 (Introduction to Print Controls).

11.1 SAPscript

In SAPscript you can choose between two methods for embedding a barcode.

11.1.1 Using Character Formats for Bar-coding (recommended)

The style for a character format can be defined as bar code (instead of a font). The assigned system bar code is adjustable. Text marked with this character format is printed as barcode.

- For SAPscript standard text (`SO10`) you can define the styles in transaction SE72.
- For SAPscript forms (`SE71`) you can define the styles also directly in the form.

11.1.1.1 Example

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



Figure 14: SAPscript and Barcode-printing

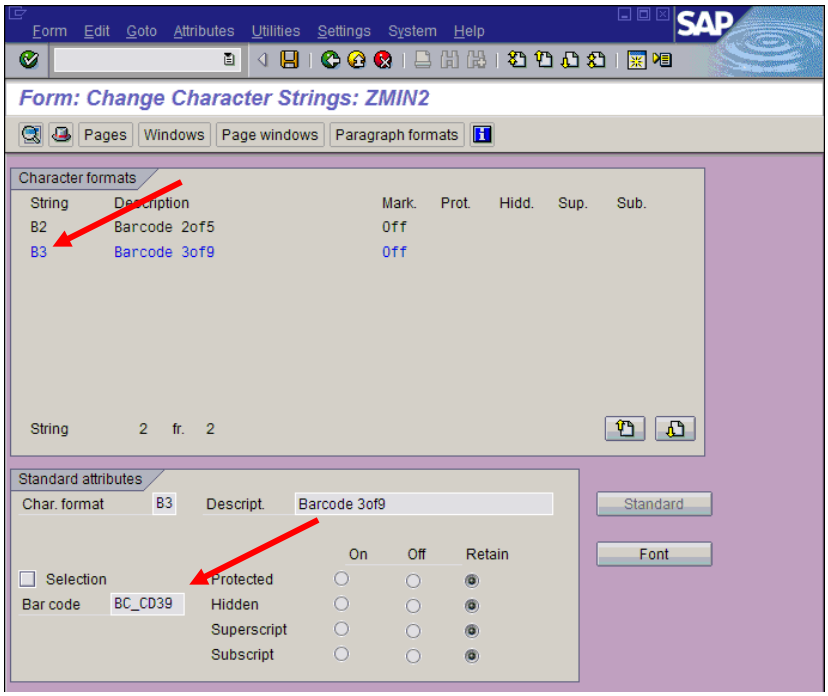


Figure 15: Character Format Definition in a SAPscript form

Data Flow For Sample Above

1. The character format `B3` is defined to use system-barcode `BC_CD39`.
2. The printer bar code definition for `BC_CD39` in the device type uses the prefix `SBP11` and suffix `SBS01`.
3. The prefix `SBP11` contains the control sequence for barcode generation (barcode-type, size, check digit…). The prefix can be adjusted to meet your bar-coding needs (see 8.2-Modifying Print Controls).

- 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.

11.1.2 Direct Use of Barcode-Print Controls in SAPscript (not recommended)

In SAPscript the barcode-related print controls (prefix and suffix) are specified directly.

```
* TEXT contains the barcode data:

*  <32>
/: 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 print control prefix; otherwise the SAPwin printer driver inserts a font command between the print control and the bar code data.

Sample:

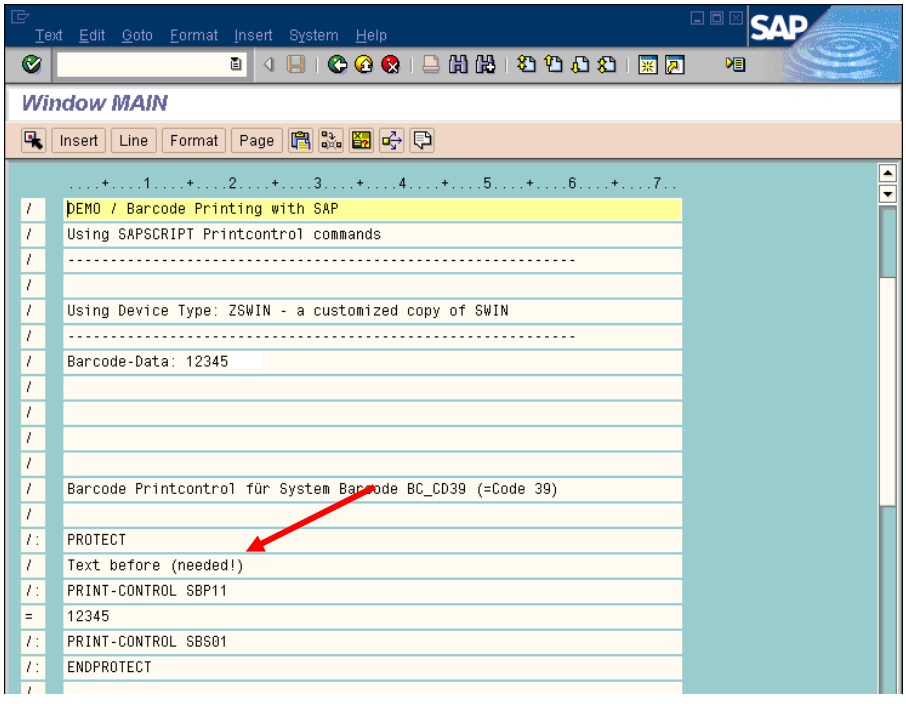


Figure 16: Sample SAPscript

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):

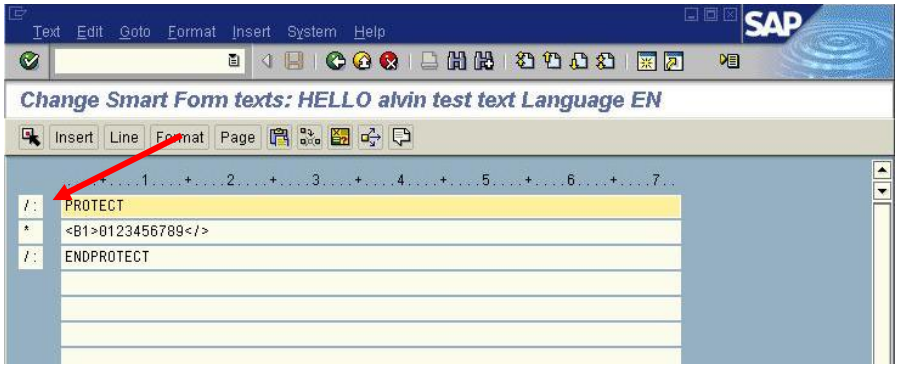


Figure 17: SmartForms Barcode Printing - Editor 1

Open the text editor with this button:

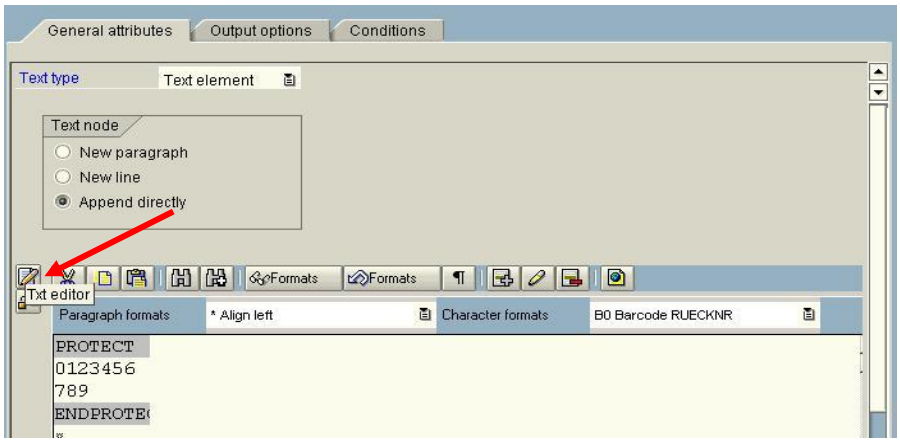


Figure 18: SmartForms Barcode Printing - Editor 2

11.2.2 Style definition

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

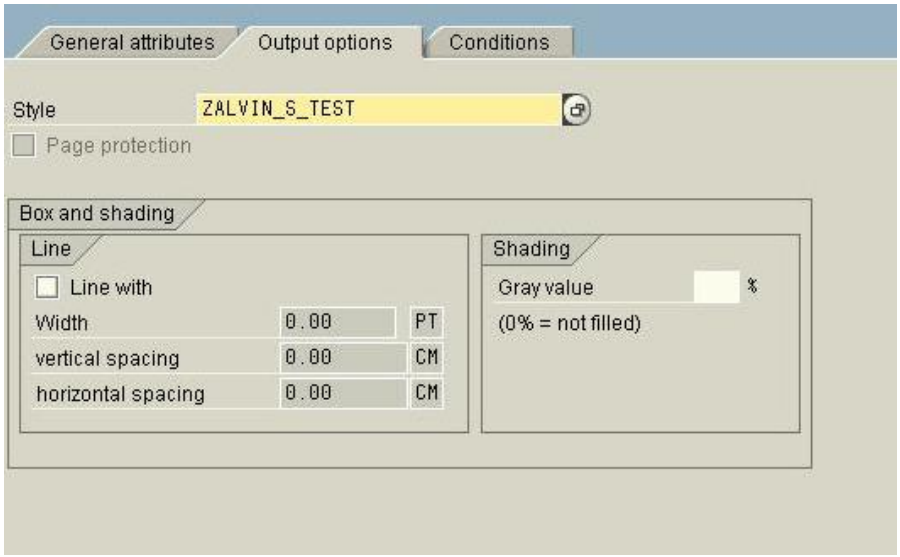


Figure 19: SmartForms Style

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

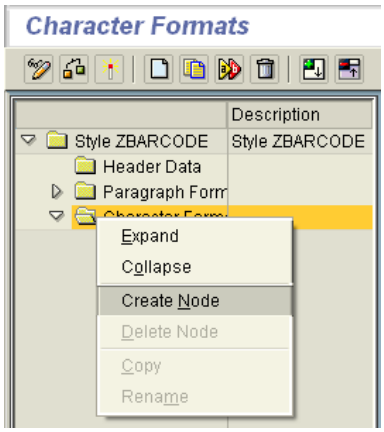


Figure 20: Style Definition – new Character Format

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.

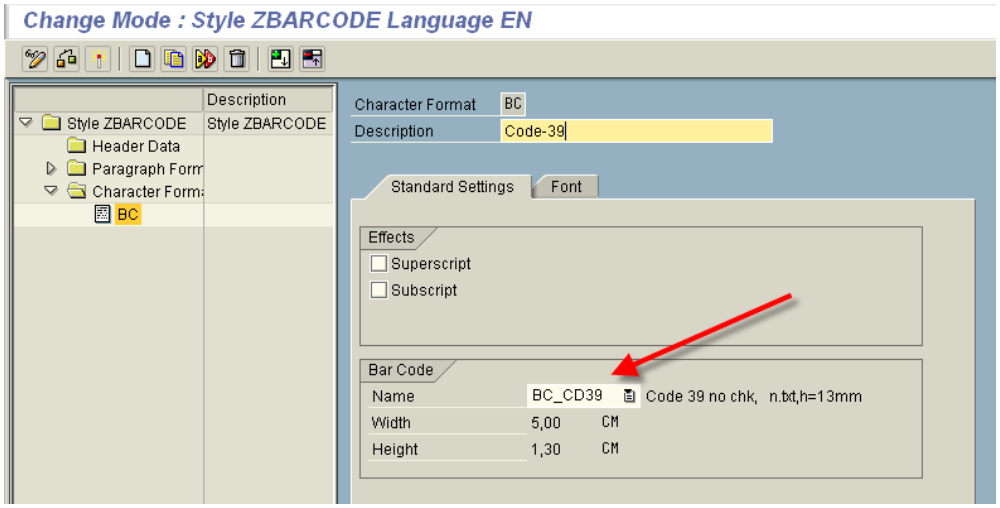


Figure 21: Style Definition – Bar Code Character Format

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 SBS01 or ESCAP (from the ZSWIN device type)

PRINT-CONTROL FUNCTION 'ESCAP'.

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

WRITE: ' ' NO-GAP.
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 Introduction to Print Controls

12.1 Usage

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

SAP R/3 is using a 3-tier system for defining print controls:

1. System Barcodes
2. Printer Barcodes
3. 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 chapter 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 with the Barcode DLL is not possible with the “newer” technology.

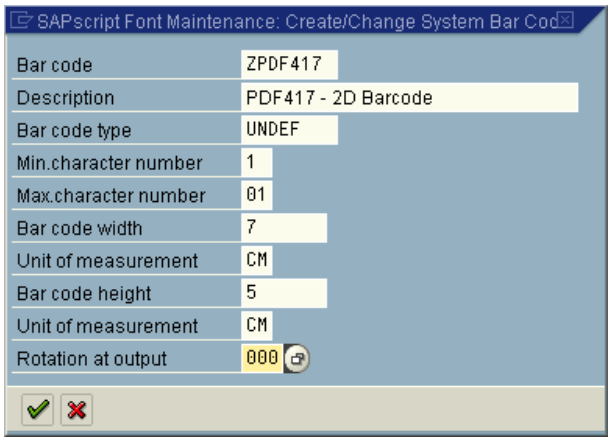


Figure 22: Create/Change a System-Barcode

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). This limit has no influence on 2D bar codes.
Barcode width	Width of the barcode. This value is only relevant for cursor and tab placement but not for the printed 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 the barcode. This value is only relevant for cursor and tab placement but not for the printed 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 (keep CM)
Rotation at output	Barcode rotation (the effective rotation is adjusted in the Printer barcodes!).

Table 9: System Barcode Field Values

Confirm the upcoming dialog with `OK`:

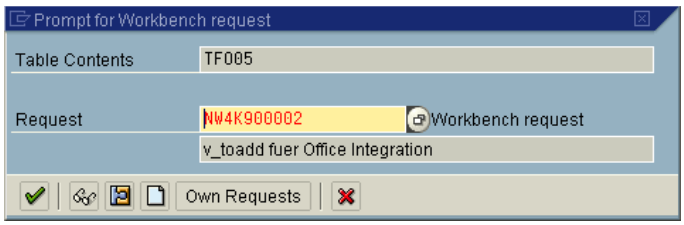


Figure 23: Confirmation Dialog: Prompt for Workbench request

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

12.2.2 New Printer Barcode

Please 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).

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 starts the bar code generation and controls the barcode properties; the suffix terminates the barcode. 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 (individual barcode settings) 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=G128,B=70,H=30,D=
```

The print control prefix can be entered in ASCII format or in Hexadecimal format. In order to avoid character set (encoding) problems you should use Hexadecimal format. Use the conversion table in chapter 17 or use any online ASCII to hex converter.

Sample print control prefix in Hexadecimal format (containing the same data as above):

```
62433D473132382C423D37302C483D33302C443D
```

➢ 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 (don’t encode them directly!). Make sure the print control is marked as “Extended” (within transaction `SPAD`).

13.1.3 Print Control-Suffix

The print control suffix is defined as follows (release dependent):

SAP-Release	Content
4.6 and before	Empty print control with Variant 5 (`Extended`)
4.7 and later	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 code of each character in the Hex – ASCII Table.

13.2.1 Barcode Type

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
C	Code selection (barcode symbology)	C=2DMM	43 3D 32 44 4D 4D	Royal Mail 2D Mailmark©
		C=4MM	43 3D 34 4D 4D	Royal Mail 4-state Mailmark©
		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 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=32	43 3D 33 32	Code 32 (Italian Pharmacode)
		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=AZT	43 3D 41 5A 54	Aztec Code
		C=BCN	43 3D 42 43 4E	Brazilian CEPNet
		C=CBF	43 3D 43 42 46	Codablock F
		C=CODA	43 3D 43 4F 44 41	Codabar
		C=DFT	43 3D 44 46 54	DAFT Code
		C=DMX	43 3D 44 4D 58	Data Matrix
		C=DC	43 3D 44 43	Dot Code
		C=DPD	43 3D 44 50 44	DPD Code
		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
		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=FLM	43 3D 46 4C 4D	Flattermarken
		C=G128	43 3D 47 31 32 38	GS1-128
		C=GDM	43 3D 47 44 4D	GS DataMatrix
		C=GQR	43 3D 47 51 52	GS1 QR Code
		C=HL128	43 3D 48 4C 31 32 38	HIBC LIC Code 128
		C=HL39	43 3D 48 4C 33 39	HIBC LIC Code 39
		C=HLCB	43 3D 48 4C 43 42	HIBC LIC CODABLOCK-F
		C=HLDM	43 3D 48 4C 44 4D	HIBC LIC Data Matrix
		C=HLMP	43 3D 48 4C 4D 50	HIBC LIC Micro PDF417
		C=HLPD	43 3D 48 4C 50 44	HIBC LIC PDF417
		C=HLQ	43 3D 48 4C 51	HIBC LIC QR Code
		C=HP128	43 3D 48 50 31 32 38	HIBC PAS Code 128
		C=HP39	43 3D 48 50 33 39	HIBC PAS Code 39
		C=HPCB	43 3D 48 50 43 42	HIBC PAS CODABLOCK-F
		C=HPDM	43 3D 48 50 44 4D	HIBC PAS Data Matrix
		C=HPMP	43 3D 48 50 4D 50	HIBC PAS Micro PDF417
		C=HPPD	43 3D 48 50 50 44	HIBC PAS PDF417
		C=HPQ	43 3D 48 50 51	HIBC PAS QR-Code
		C=HX	43 3D 48 58	Han Xin Code
		C=I14	43 3D 49 31 34	ITF-14
		C=IMB	43 3D 49 4D 42	USPS Intelligent Mail® Barcode
		C=IMPB	43 3D 49 4D 50 42	USPS Intelligent Mail® Package
		C=ISBN	43 3D 49 53 42 4E	ISBN 13
		C=IB+5	49 42 2B 35	ISBN 13 with Add-on (5 digits)
		C=ISMN	43 3D 49 53 4D 4E	ISMN
		C=ISSN	43 3D 49 53 53 4E	ISSN
		C=IS+2	43 3D 49 53 2B 32	ISSN with Add-on (2 digits)
		C=IP25	43 3D 49 50 32 35	Italian Postal 2 of 5
		C=IP39	43 3D 49 50 33 39	Italian Postal 3 of 9
		C=JP	43 3D 4A 50	Japanese Postal
		C=KIX	43 3D 4B 49 58	KIX
		C=KPA	43 3D 4B 50 41	Korean Postal Authority
		C=MPDF	43 3D 4D 50 44 46	MicroPDF417
		C=MQR	43 3D 4D 51 52	Micro QR-Code
		C=MSI	43 3D 4D 53 49	MSI
		C=MXC	43 3D 4D 58 43	MaxiCode
		C=NVE	43 3D 4E 56 45	NVE-18
		C=NTIN	43 3D 4E 54 49 4E	NTIN
		C=P12	43 3D 50 31 32	Planet 12
		C=P14	43 3D 50 31 34	Planet 14

		C=PDF	43 3D 50 44 46	PDF417
		C=PDT	43 3D 50 44 54	PDF417 Truncated
		C=PH1	43 3D 50 48 31	Pharmacode 1-Track
		C=PH2	43 3D 50 48 32	Pharmacode 2-Track
		C=PLS	43 3D 50 4C 53	Plessey
		C=PLB	43 3D 50 4C 42	Plessey Bidirectional
		C=PPN	43 3D 50 50 4E	PPN
		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=PZN	43 3D 50 5A 4E	Pharmazentralnummer (PZN7)
		C=PZN7	43 3D 50 5A 4E 37	Pharmazentralnummer (PZN7)
		C=PZN8	43 3D 50 5A 4E 38	Pharmazentralnummer (PZN8)
		C=QRJ	43 3D 51 52 4A	QR-Code (SHIFT JIS char set)
		C=QRC C=QR2	43 3D 51 52 43 43 3D 51 52 32	QR-Code ISO/IEC 18004:2015 (Latin-1 char set)
		C=R14 C=R	43 3D 52 31 34 43 3D 52	GS1 DataBar (RSS-14)
		C=RL	43 3D 52 4C	GS1 DataBar Limited
		C=RT	43 3D 52 54	GS1 DataBar Truncated
		C=RS	43 3D 52 53	GS1 DataBar Stacked
		C=RO	43 3D 52 4F	GS1 DataBar Stacked Omni
		C=RE	43 3D 52 45	GS1 DataBar Expanded
		C=RX	43 3D 52 58	GS1 DataBar Expanded Stacked
		C=RM	43 3D 52 4D	Royal Mail 4-State
		C=SQR	43 3D 53 51 52	Swiss QR Code
		C=SSCC18	43 3D 53 53 43 43 31 38	Serial Shipping Container Code (AI00)
		C=SWP	43 3D 53 57 50	Swedish Postal
		C=TEL	43 3D 54 45 4C	Telepen
		C=TELA	43 3D 54 45 4C41	Telepen Alpha
		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
		C=US10	43 3D 55 53 31 30	UPU S10
		C=VIN	43 3D 56 49:4E	Vehicle Identification Number (VIN, FIN)

Table 12: Barcode Type Print Control Parameters

13.2.2 Barcode Data, Encoding

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
CP	Code Page Index	CP=1 CP=2 CP=3 CP=4 CP=5 CP=6 CP=7 CP=8 CP=9 CP=10 CP=11 CP=12	43 50 3D 31 43 50 3D 32 43 50 3D 33 43 50 3D 34 43 50 3D 35 43 50 3D 36 43 50 3D 37 43 50 3D 38 43 50 3D 39 43 50 3D 31 30 43 50 3D 31 31 43 50 3D 31 32	Select one of the predefined code pages. Parameter **EM** must be **0** or default. 1: Barcode type default 2: ANSI 3: Windows-1252 (1252) 4: ISO 8859-1 Latin I (28591) 5: ASCII Extended (437) 6: UTF-8 7: Korean (949) 8: Japanese / Shift-JIS (932) 9: Simplified Chinese (936) 10: Traditional Chinese (950) 11: ANSI - Cyrillic (1251) 12: Russian KOI8-R (20866)
CPC	Custom Code Page	CPC=437 CPC=1252	43 50 43 3D 34 33 37 43 50 43 3D 31 32 35 32	As alternative to the predefined code pages you can specify the code page ID directly. e.g.: 437 for ASCII extended If a CPC is specified, the CP parameter will be ignored. The EM parameter must be 0.
D	Barcode data (digits / characters)	D=*1234ABCD*	44 3D	Data characters that are encoded in the barcode. Must be at the end of the print control prefix.
DH	Barcode data in hexadecimal format	DH=*31323334*	44 48 3D	Data characters to be encoded in hexadecimal format (2 hex digits per Byte). Can be used for binary data. If you supply data in this format, bar code specific code pages are not applied. Must be at the end of the print control prefix.
E	Translate Escape Sequences (see 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
EM	Encoding Mode	EM=0 EM=1 EM=2 EM=3 EM=4	45 4D 3D 30 45 4D 3D 31 45 4D 3D 32 45 4D 3D 33 45 4D 3D 34	Switch between code page or raw / binary encoding. 0 (Default): Convert data to given code page - see also **CP** and **CPC** 1: Encode Lower Byte → Unicode: ignore HI-BYTE; ANSI: no conversion done. Select this option to disable code page conversions. 2: As Byte Stream (Low + High Byte) → Unicode: LO-Byte before HI-BYTE; ANSI: no conversion done 3: As Byte Stream (High + Low Byte) → Unicode: HI-Byte before LO-BYTE; ANSI: no conversion done 4: Treat data as sequence of Hexadecimal codes (e.g. 313233 = „123“). Can be used for binary data. Functionality equals DH parameter.
N	Normalize Bar Code Data	N=N N=L N=R	4E 3D 4E 4E 3D 4C 4E 3D 52	N=N: No normalization (no white space stripping)

		N=A	4E 3D 41	L: Strip white spaces on the left side of the data. R: Strip white spaces on the right side of the data. A: Strip white spaces on both sides of the data.
PF	Format the data with PrintF syntax.	PF=%04d	50463D25303464	Number formatting using 'printf' format specifiers, supporting also prefixes.
F	Format string applied to the bar code data before encoding.	F=C####B&	46 3D 43 23 23 23 23 42 26	TBarCode format string: # = next data character, & = all remaining characters, ^ = check digit, A/B/C = switch Code 128 subset, E = translate escape sequences. Further characters have special functions for certain bar code types (e.g. D, J, R, S, < and >); all other characters are inserted literally. Example: the first 4 digits are encoded in Code 128 subset C, the rest in subset B. Not to be confused with PF (printf number formatting).
P	Check digit calculation with automatic selection of the check digit method.	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
CD	Check digit calculation with manual selection of the check digit method.	CD=0 CD=1 CD=2 ... CD=36	43 44 3d 30 43 44 3d 31 43 44 3d 32 ... 43 44 3d 33 36	The CD parameter selects the check digit method. The following values are supported: 0: No check digit 1: Standard check digit 2: Modulo 10 (Interlv. 2of5) 3: Modulo 43 (e.g. for Code39) 4: Modulo 47 (2 digits) 5: Method for DP Leitcode 6: Method for DP Identcode 7: Code11 (1 digit) 8: Code11 (2 digits) 9: Method for USPS PostNet 10: MSI (Modulo 10, 1 digit) 11: MSI (Modulo 10, 2 digits) 12: Method for Plessey 13: Method for EAN 8 14: Method for EAN 13 15: Method for UPC A 16: Method for UPC E 17: GS1-128 (Modulo 103) 18: Code 128 (Modulo 103) 19: Royal Mail 4 State 20: Mod 11 Method for PZN. 21: Mod 11 (using weight 7) 22: Method for EAN 14 23: Korean Postal Authority 24: Planet (Mod 10 based) 25: Italian Postal 2/5 (Mod 10) 26: Mod 36 (ISO/IES 7064) for DPD Barcode 27: Mod 16 Codabar 28: Mod 10 (Luhn) 29: VIN (North America) 30: Mod 10 with reverse Luhn

				31: Mod 23 for PPSN 32: Mod 10 (Int. Mail Package Barcode) 33: Mod 11 (maximum weight 10) 34: Swedish Postal Shipment Item ID / Mod 11 for postal codes (UPU) 35: Mod 11 (maximum weight 9) 36: Mod 37,2 (ISO 7064, maximum weight of 2^9) The CD parameter will be ignored if P=… is specified.
V	Variable for concatenating multiple data blocks into one barcode	VA30=part1of3 VA31=part2of3 VA32=part3of3	56 41 33 30 3D+ data 56 41 33 31 3D+ data 56 41 33 32 3D+ data	As an alternative to the D parameter, you can split up 2D bar code data into multiple "chunks" and pass them through "variables" to the Barcode DLL. More details see our extra document *2D_Barcode_Data_Splitting.pdf*
%	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 GS1 codes)

Table 13: Barcode Data / Encoding Print Control Parameters

13.2.3 Barcode Size

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
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: width of the bar code in mms 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). Use a point as decimal mark.
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 „B“	Height of the bar code in mms. Decimal places are supported (e.g. H=3.5), use a point as decimal mark. A negative value (H=-20) draws the bar code downward[3].
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 you want to specify the module width, please use the M parameter. 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.

[3] With Direction=-1 (barcode.ini) the direction will be reversed.

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 modules in the symbol	L4=24 L4=-1200	4C 34 3D + width	Analog to L1
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
O	Optimize module width	O=0 O=1 O=2	4F 3D 30 4F 3D 31 4F 3D 32	Optimize the module width for the actual printing resolution. Hereby the module width will be aligned to the pixel raster of the printer. The bar code may get smaller thereby. O=0: No optimization O=1: Optimize O=2: Optimize + add special handling for 8 Dots/mm thermal printers. Default: Parameter *DefOptResolution* and *OptimizeFor8DotsPerMM* (Barcode.ini – see 16.3)
PR	Ratio between small and wide bars / spaces (Print Ratio)	PR=1:2:1:2	50 52 3D 31 3A 32 3A 31 3A 32	Specifies the ratio between several bars and spaces in the bar code. Structure: <B1>:<B2>:…:<Bn>:<S1>:<S2>:…:<Sn> With B1..Bn as bar widths and S1…Sn as space widths. *Combining M and PR is a shorter alternative to the L and S parameters.*
QZ	Quiet Zone (in number of modules)	QZ=10 QZ=10:5 QZ=5:0:0:0	51 5A 3D 31 30	Specifies the quiet zone in the unit of number of modules (module width M). The syntax is variable and uses the ":" Colon for parameter separation. QZ=*AllSides* QZ=*Horz : Vert* QZ=*Left : Right : Top : Bottom*
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 mm]	If you want to specify the module width, please use the M parameter. 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

W	Bar width reduction in percent of the module width	W=0 W=10	57 3D 30 57 3D 31 30	Compensates dot gain. W=0 is default (no reduction) W=10 reduces the bar width by 10% (based upon module width), the printed size of the small bar element will be 90% of the nominal value.

Table 14: Barcode Size Print Control Parameters

13.2.4 Position, Orientation, Origin

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
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]
X	Horizontal starting position of the barcode symbol [mms]	X=100	58 3D + start position X	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 + start position Y	Distance to the upper side of the page [mms]. If not specified the actual cursor position will be used.
OR	Origin	OR=T OR=B	4F 52 3D 54 4F 52 3D 42	Origin of the bar code. Can be used to determine the printing direction. OR=T … Top OR=B … Bottom

Table 15: Barcode Position, Orientation, Origin Print Control Parameters

13.2.5 Human Readable Text

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
A	Human readable text	A=0	41 3D 30	A=0: no human readable text is printed
		A=1	41 3D 31	A=1: the human readable text is printed below the bar code
		A=2	41 3D 32	A=2: the human readable text is printed above the bar code
FS	Font Size	FS=8	46 53 3D 38	Font-size in points
FW	Font Weight	FW=N FW=B	46 57 3D 4E 46 57 3D 42	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.
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

Table 16: Human Readable Text Print Control Parameters

13.2.6 Parameters specific for Aztec Code

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
AZE	Error Correction	AZE=-1 AZE=50	41 5A 45 3D 2D 31 41 5A 45 3D 35 30	Error Correction Level (ECL) -1: Default (23%) 0..89: Error correction in percent
AZFM	Aztec Code Format	AZFM=0	41 5A 46 4D 3D 30	Format Specification:

		AZFM=1 AZFM=2	41 5A 46 4D 3D 31 41 5A 46 4D 3D 32	AZFM=0 (default): Standard 1: GS1/UCC/EAN 2: Industry (AZFI must be specified)
AZFI	Aztec Code Format Indicator	AZFI=a	11 5A 46 49 3D + value	Code-Format-Indicator (used for AZFM=2). Value can be 1 alphanumeric character or 2 numeric chars.
AZB	Binary Compaction Mode	AZB=0 AZB=1	41 5A 42 3D 30 41 5A 42 3D 31	Enforce the binary encoding mode for Aztec Code. 0: Optimized Encoding 1: Binary compaction (no data analysis). No code page conversion (equals EM=1).
AZS	Symbol Size	AZS=0 AZS=1 … AZS=36	51 52 56 3D 30 51 52 56 3D 31 … 51 52 56 3D 34 30	Symbol Size. 0 (default): Automatic size adaptation 1: Smallest symbol ... 33: Largest symbol 34-36: Reader programming mode (please refer to the table below)
AZR	Rune Mode	AZR=0 AZR=1	41 5A 52 3D 30 41 5A 52 3D 31	In Rune mode you can only encode numbers between 0 and 255. Therefore the symbol size can be reduced to a minimum. 0: Rune Mode is off (default) 1: Rune Mode is on
AZAI	Structured Append Mode: Index of current symbol	AZAI=1 AZAI=2 … AZAI=16	41 5A 41 49 3D 31 41 5A 41 49 3D 32 ...	Index of the current symbol when using Structured Append
AZAM	Structured Append Mode: Message ID	AZAM=Text	41 5A 41 4D 3D + Message-ID	Message ID for Structured Append Mode (must be identical for all symbols in a chain).
AZAS	Structured Append Mode: Total number of symbols	AZAS=2 AZAS=3 … AZAS=16	41 5A 41 53 3D 32 41 5A 41 53 3D 33 ...	Number of symbols chained together with Structured Append

Table 17: Aztec Code Print Control Parameters

13.2.7 Parameters specific for Data Matrix

Command	Explanation	Values	ASCII Hex Code	Explanation
DMF	Data Matrix-Format	DMF=0 DMF=1 DMF=2 DMF=3 DMF=4 DMF=5 DMF=6	44 4D 46 3D 30 44 4D 46 3D 31 44 4D 46 3D 32 …	Support of special industry standards 0 (default): Standard 1: GS1 Data Matrix (FNC1 at 1st position) 2: Industry 3: Macro 05 4: Macro 06 5: Reader programming 6: German Post „Postmatrix“
DMB	Binary Compaction Mode	DMB=0 DMB=1	44 4D 42 3D 30 44 4D 42 3D 31	Enforce the binary encoding mode for Data Matrix. 0: Analyze input data and use arbitrary encoding mode 1: Encode all data in Base 256 mode. No code page conversion (equals EM=1).

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: 0 (default): Size is calculated automatically 1: 10 x 10 2: 12 x 12 … 30: 16 x 48 (refer to 22.2 for all sizes)
DMAF	Structured Append Mode: File ID	DMAF=123456	44 4D 41 46 3D + File ID	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 18: Data Matrix Print Control Parameters

13.2.8 Parameters specific for MaxiCode

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
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, etc.). 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 19: MaxiCode Print Control Parameters

13.2.9 Parameters specific for PDF417

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
PDEC	Error Correction Level	PDEC=-1 PDEC=0 PDEC=1 PDEC=2 PDEC=3 PDEC=4 PDEC=5 PDEC=6 PDEC=7 PDEC=8	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 error recognition 1: Lowest error correction 8: Highest error correction
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.
PDM	PDF Encoding Mode	PDM=0 PDM=1	50 44 4D 3D 30 50 44 4D 3D 31	Binary compaction mode. 0: Analyze input data and use optimal encoding mode 1: Encode all data in binary compaction mode. No code page conversion (equals EM=1).

Table 20: PDF417 Print Control Parameters

13.2.10 Parameters specific for MicroPDF417

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
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]
PDM	PDF Encoding Mode	PDM=0 PDM=1	50 44 4D 3D 30 50 44 4D 3D 31	Binary compaction mode. 0: Analyze input data and use optimal encoding mode 1: Encode all data in binary compaction mode. No code page conversion (equals EM=1).
MPM	MicroPDF Mode (encoding format)	MPM=0 MPM=1 MPM=2 MPM=3 MPM=4 MPM=5 MPM=6 MPM=7 MPM=8	4D 50 4D 3D + Mode	0 (default): Analyze input data and switch to compaction mode for smallest symbol 1: GS1-128 Emulation 2: Code128 Emulation 3: Code128 FNC1 2nd position 4: Linked GS1-128 Emulation 5: 05 Macro 6: 06 Macro 7: CC-A Data Mode 8: CC-B Data Mode
MPV	MicroPDF Version (version of data columns and data rows)	MPV=0 ... MPV=38	4D 50 56 3D + version index	0 (default): Automatic selection >0: Adjust specific symbol version - see table in 22.4. The version determines the maximum number of code able data characters and influences also the graphical data density of the symbol.

Table 21: MicroPDF417 Print Control Parameters

13.2.11 Parameters specific for QR-Code

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
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: L (Low ECL) 1: M (Standard) 2: Q 3: H (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: 0 (default): Standard 1: GS1/UCC/EAN 2: Industry (QRFI must be set)
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. -1 or not set (default): Mask is calculated automatically as per QR Code specification. QRM=0: Selects Mask #0 ... QRM=7: Selects Mask #7 It is recommended to not set the mask explicitly.
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	Size (see 22.3). 0 (default): Automatic selection 1: Smallest symbol ... 40: Largest symbol
QRC	Multi Byte Compaction	QRC=-1 QRC =0 QRC =1 QRC =2	51 52 43 3D 2D 31 51 52 43 3D 30 51 52 43 3D 31 51 52 43 3D 32	-1 (default): Compaction is based on code page 0: No Compaction 1: Kanji Compaction 2: Chinese Compaction
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 22: QR-Code Print Control Parameters

13.2.12 Parameters specific for Micro QR-Code

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
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: L (Low ECL) 1: M (Standard) 2: Q 3: H (Highest ECL)
MQM	Micro QR-Code Mask	MQM=-1 MQM=0 MQM=1 MQM=2 MQM=3	4D 51 4D 3D 2D 31 4D 51 4D 3D 30 4D 51 4D 3D 31 4D 51 4D 3D 32 4D 51 4D 3D 33	Graphic Mask Pattern. -1 (default): Standard, mask is calculated automatically. 0: Selects Mask #0 ... 3: Selects Mask #3
MQV	Micro QR-Code Version	MQV=0 MQV=1 MQV=2 MQV=3 MQV=4	4D 51 56 3D 30 4D 51 56 3D 31 4D 51 56 3D 32 4D 51 56 3D 33 4D 51 56 3D 34	Size (see table in 22.4) 0 (default): Automatic size adaptation 1: Smallest symbol ... 4: Largest symbol
QRC	Multi Byte Compaction	QRC=-1 QRC =0 QRC =1 QRC =2	51 52 43 3D 2D 31 51 52 43 3D 30 51 52 43 3D 31 51 52 43 3D 32	-1 (default): Compaction is based on code page 0: No Compaction 1: Kanji Compaction 2: Chinese Compaction

Table 23: Micro QR-Code Print Control Parameters

13.2.13 Parameters for Codablock F

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
CBC	Fixed number of columns	CBC=-1 CBC=4 … CBC=62	4342433D+Numb er	Default or -1 … automatic calculation 4..62: number of graphic columns in the symbol
CBR	Fixed number of rows	CBR=-1 CBR=2 … CBR=44	4342523D+Numb er	Default or -1 … automatic calculation 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 24: Codablock-F Print Control Parameters

13.2.14 GS1 DataBar Expanded Stacked specific Parameter

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
SR	Segments per Row	SR=2 ... SR=22	53 52 3D 32 ... 53 52 3D 32 32	Number of data segments per row in GS1 DataBar Expanded Stacked. Influences the width to height ratio.

Table 25: RSS Expanded Stacked Print Control Parameters

13.2.15 GS1 Composite Symbology Parameter

Com-mand	Explanation	Values	ASCII Hex Code	Explanation
CC	2D Composite Component Combinable with EAN-8, EAN-13, UPC-A, UPC-E, all GS1 DataBar Codes and GS1-128	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 separator character (Default “|” - vertical bar), e.g.: 12345678|CompositeData. The separator character can be changed with parameter **CS**.
CS	Composite Separator	CS=_ CS=&	43 53 3D 5F 43 53 3D 26	Specify the separator character for composite components (Default: | - vertical bar).

Table 26: GS1 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 27: 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, GS1-128, EAN128, UCC128, 2D Codes
FNC2	\211	Code 128, GS1-128, EAN128, UCC128
FNC3	\212	Code 128, GS1-128, EAN128, UCC128
FNC4	\213	Code 128, GS1-128, 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 28: Barcode-specific Control Sequences

15 OMS Integration with OMSPRINT

Starting with SAPSprint version 7.20 patch 4 the new OMSPRINT will be delivered as part of the package.

The new interface OMSPRINT combines the advantages of SAPWIN (such as device type-independent printing via the Windows printer drivers and using any fonts) with the advantages of an OMS (such as print job monitoring and status confirmation via a Remote Function Call (RFC)).

The interface of OMSPRINT consists of two commands that you can call using the command line as described below. The call takes place in your OMS.

Print data stream generation:

```
omsprint -pf <Input data> -p <Printer> -of <Print data>
```

➢ More details see SAP Note 1545557 – OMS interface for SAPSprint

15.1 Installation and Usage

Starting with TBarCode/SAPwin V10 the Barcode DLL can be utilized also with OMSPRINT. The Barcode DLL must be installed in the same directory as OMSPrint.exe.

The use is similar to SAPSprint. The bar code print controls in the SAPWIN print data stream are evaluated and passed to the Barcode DLL which generates the bar code device independent.

Feedback to the OMS takes place via standard output (stdout) and standard error (stderr). The Barcode DLL enables the standard data streams automatically as soon as it is loaded by the OMSPrint.exe process.

The logging behavior of the Barcode DLL is configurable in the Barcode.ini file in section [LOG]. Without any additional settings only error messages are logged to *stderr* (no *stdout* output).

By examining *stdout* and *stderr* the OMS is able to react accordingly.

16 BarCode.ini Configuration File

16.1 Search Path

The `Barcode.ini` file is searched in the following order in the following locations:

- The installation directory of the Barcode DLL,
- the "Application Data" or "ProgramData" directory (see table below)
- or the Windows directory.

Operating System	Barcode.ini Directory
Windows XP and earlier Windows versions	`C:\Documents and Settings\All Users\Application Data\TEC-IT\TBarCode SAPwin\<version number>`
Windows Vista and newer	`C:\ProgramData\TEC-IT\TBarCode SAPwin\<version number>`

Table 29: Barcode-Ini Default Location

The default location is the Application Data and ProgramData directory (see table).

16.2 Section [LICENSE_DATA]

Parameter Name	Description
License_Product	The product ID depending on product version and licensed bar code types. 2030 = V11 / 1D license 2031 = V11 / 1D + 2D license
Licensee	Name of licensee (as issued in license key)
License_Kind	ID of the license kind (1 = Single, 2 = Site, 3 = World)
Number_Of_Licenses	Number of purchased licenses (e.g. "1")
License_Key	The license key in hexadecimal format (32 characters)

Table 30: Barcode-Ini Section LICENSE_DATA

Sample:

```
License_Product=2030
Licensee=John Doe Limited
License_Kind=2
Number_Of_Licenses=1
License_Key=4D757374657220436F6D70616E792047
```

16.3 Section [SETTINGS]

Parameter Name	Description
Direction	Selects the printing direction of the barcodes (up or down). Change this setting if the position of the bar code looks wrong. Refer to 23.20 (How to Change the Vertical Alignment of the Barcodes?). 0 or 1 for standard print direction of barcodes (preset in TBarCode/SAPwin V10+) -1 for reversed print direction: All barcode symbols are drawn from top-to-bottom instead of bottom-to-top (preset in TBarCode/SAPwin V6/V9)
Shift	Shifts the baseline of the symbol. Use this parameter 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)
XOffset	Shifts the bar code in X direction A positive value shifts the bar code to the right, a negative value to the left. The unit is [mm], decimal places must be separated by a point. The parameter affects all bar codes in a document. 0 no offset (Default) 10.5 shift 10.5 mms to the right
YOffset	Shifts the bar code in Y direction A positive value shifts the bar code to the bottom, a negative value to the top. The unit is [mm], decimal places must be separated by a point. The parameter affects all bar codes in a document. 0 no offset (Default) 10.5 shift 10.5 mms downward
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)
DefaultSet	Uses a set of default values for specific bar code parameters If particular bar code parameters are not defined via Print control, they can be also initialized from presets (de facto industry standards). The default set contains values for module width, symbol height, plain text on/off, PDF417 row/col ratio depending on the selected bar code type. See also chapter 21 DefaultSet Values 0 No set of standard values 1 Use Set 1 = common industry standards (Default as of V11) Hint: If no preset is available for a specific bar code, `DefModWidth` is used
DefModWidth	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”). It influences 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*
DefBearerBarWidth	Specifies the default bearer bar width in 1/1000 mm (e.g. 500 = 0.5 mm). This value is used if the width of the bearer bar is not set by the print control. 0 no bearer bar will be drawn (default) 300 bearer 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)
DefOptResolution	Optimizes the module width for actual printing resolution The module width is aligned to the pixel boundaries of the actual output device whereby it is always downsized to the next full pixel, the bar code becomes less wide in this case. The resolution is retrieved during printing. This setting has an impact on all printers. This measure increases the bar code decode ability and quality grade at low printing resolution (thermo transfer printers). See also our FAQ. 0 no optimization (Default) 1 Optimize module width
OptimizeFor8DotsPerMM	Add special optimization for 8 Dots/mm thermal printers This optimization is required if the printer driver calculates internally with 203.2 dpi. This parameter has an impact only if *DefOptResolution* or print control *O=1* is set. 0 no special optimization (Default) 1 Add 8 Dots/mm optimization

StripWhiteSpace	The value specifies the white space stripping method that should be applied to the bar code data. This parameter is used for avoiding unintentional spaces before and behind the bar code data. N no white space stripping (default) L white space stripping on the left side R white space stripping on the right side A white space stripping on both sides Attention: Avoid white space stripping if your bar code data is binary or could contain white spaces on the begin or at the end of the bar code.
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
DefCompositeSeparator	Set the default composite separation character This setting is used only if a composite symbol has to be generated. A composite symbol consists of a main part (mostly 1D) and a composite part (2D). Each of the parts has to be filled with data. To separate the 2 data parts in the data stream, a composite separator character is used (default '|'). This setting makes it possible to use another separator character instead. Note: Some SAP environments filter out "|" characters from the data stream. This setting can be used to work around this problem.

Table 31: Barcode-Ini Section SETTINGS (part 1)

Example:

```
[SETTINGS]
Direction=1
Shift=1
DefModWidth=254
OnError=Message
DefaultSet=1
DataMode=0
```

16.3.1 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 32: 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.

16.3.2 Character Encoding / Code Pages

Parameter Name	Description
DataMode	Specifies the data encoding mode of the print controls sent by SAP. Depending on the SAP version the encoding of the print control string may be different. Use this setting to attune to the particular data mode. Note: This setting applies only to the standard BarcodePrint function and not to the Unicode interface (V10.1 or later). 0 Auto-detection (default) The bar code library examines the print control and conforms automatically to the its encoding. 1 ANSI Mode The bar code library assumes that the print control is in ANSI format 2 Mixed Mode Experts only: The bar code library assumes that the print control is in mixed format (16-bit UNICODE and ANSI characters)
DefEncodingMode	Specifies how the input data shall be interpreted. The encoding mode is an integer argument that may have following values: 0 Code Page (Default) The input string is converted to the selected code page (default) -- see *DefCodePageIndex*. 1 Encode Lower Byte The input string is treated as a sequence of ASCII characters ranging from 0 to 255. If the input data is UNICODE/UTF-16 → only the Lower Byte is encoded. Single Byte (ANSI) → it is used as it is, no conversion is done. 2 As Byte Stream (Low + High Byte) The input string is treated as byte stream (Low Byte before High Byte). If the input data is UNICODE/UTF-16 → 16-bit characters in the input stream are interpreted as two ASCII characters. This encoding mode is used for encoding binary and (untranslated) UNICODE data. Single Byte (ANSI) → it is used as it is ==> no conversion is done. 3 As Byte Stream (High + Low Byte) The input string is treated as byte stream (High Byte before Low Byte). If the input data is UNICODE/UTF-16 → 16-bit characters in the input stream are interpreted as two ASCII characters. This encoding mode is used for encoding binary and (untranslated) UNICODE data (reverse byte order of (2)). Single Byte (ANSI) → it is used as it is, no conversion is done. 4 As sequence of Hexadecimal digits Data characters are treated as binary data in Hexadecimal format (two hex digits per Byte value). If you supply data in this format, bar code specific code pages are not applied.
DefCodePageIndex	Following predefined code pages can be used: 1: Default (depends on bar code type) 2: ANSI Code Page 3: Windows-1252 (1252) 4: ISO 8859-1 Latin I (28591) 5: ASCII Extended (437) 6: UTF-8 7: Korean (949) 8: Japanese / Shift-JIS (932) 9: Simplified Chinese (936) 10: Traditional Chinese (950) 11: ANSI - Cyrillic (1251) 12: Russian KOI8-R (20866) Attention: The encoding mode must be set to *Code Page* (=default) to use this setting.
DefCodePageCustom	The Code page ID Alternatively to the predefined code pages it is possible to enter the code page id directly. Any value set here overrides *DefCodePageIndex*. Attention: The encoding mode must be set to *Code Page* (=default) to use this setting.

	437	set the code page to ASCII Extended (437)

Table 33: Barcode-Ini Section SETTINGS (part 3)

16.4 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 34: 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`

16.5 Section [LOG]

Parameter Name	Description
Console	Selects the output stream used for console logging. Relevant when using OMSPrint. 0 no output to console (default with SAPSprint/SAPGUI) 1 log everything to standard output (stdout) 2 log informational messages to standard output (stdout) and error messages to standard error (stderr). (default with OMSPrint) It is recommended to keep the default setting. For logging into a file use *File=1*
Level	Selects the log level (granularity of log entries). 0 no log (default with SAPSprint/SAPGUI) 1 log errors (default with OMSPrint) 2 log errors and bar code information 3 log errors, barcode information and debug information (high data volume). *Level=3* equals [DEBUG] Level=1 *Because of high data volume you should use Level 2 and 3 only on demand.*
File	Enables file logging This option writes informational and error messages into a log file "Barcode.log". 0 no log file (Default) 1 write log file (depending on *Level*)

Table 35: Barcode.ini Section LOG

The following example logs error messages in the log file „BarCode.log“:

```
[LOG]
;Console=0
Level=1
File=1
```

16.5.1 Log File Path:

Operating System	Barcode.log Directory
Windows XP and earlier Windows versions	`C:\Documents and Settings\All Users\Application Data\TEC-IT\TBarCode SAPwin\<version number>`
Windows Vista and newer Windows versions	`C:\ProgramData\TEC-IT\TBarCode SAPwin\<version number>`

For more information see also 23.3.1 TBarCode/SAPwin Log File “barcode.log”

16.6 Section [DEBUG]

➢ ATTENTION: Do not activate debugging for production use!

Parameter Name	Description
Level	Debug level A file named `barcode.log` will be written and all actions and parameters are logged into this file. 0 no debugging (Default) 1 debugging enabled (maximum log level will be used)
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 36: Barcode-Ini Section DEBUG

Example (logging enabled, fixed bar code print control).

The following setting prints always a Code128 symbol with encoded data “This is a test” – independent from the Printcontrol in SAP.

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

17 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 37: ASCII-HEX Conversion

18 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 38: Predefined System Barcodes

- 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).

19 Printer Barcodes

Below you find the Printcontrols for the appropriate system bar codes. The prefix is maintained in transaction SE73 (Printer Barcodes).

System Barcode	Print Control Prefix (Default)	Print Control Prefix (Fixed Module Width)*
ARTNR	bC=128B,B=48,H=12,D=	bC=128B,M=254,H=12,D=
AUFNR	bC=128B,B=48,H=12,D=	bC=128B,M=254,H=12,D=
BARCLVS	bC=39,B=50,H=20,P=0,D=	bC=39,M=254,H=20,P=0,D=
BC_C128B	bC=128B,B=90,H=13,A=0,D=	bC=128B,M=254,H=13,A=0,D=
BC_CD39	bC=39,B=50,H=13,A=0,D=	bC=39,M=254,H=13,A=0,D=
BC_CD39C	bC=39,B=90,H=13,P=1,A=0,D=	bC=39,M=254,H=13,P=1,A=0,D=
BC_EAN8	bC=E8,B=30,H=13,A=0,D=	bC=E8,M=339,H=13,A=0,D=
BC_EAN13	bC=E13,B=50,H=13,A=0,D=	bC=E13,M=423,H=13,A=0,D=
BC_EANH	bC=G128,B=90,H=13,A=0,D=	bC=G128,M=254,H=13,A=0,D=
BC_I25	bC=25L,B=50,H=13,P=0,A=0,D=	bC=25L,M=254,H=13,P=0,A=0,D=
BC_I25C	bC=25L,B=50,H=13,P=1,A=0,D=	bC=25L,M=254,H=13,P=1,A=0,D=
BC_MSI	bC=MSI,B=90,H=13,P=0,A=0,D=	bC=MSI,M=254,H=13,P=0,A=0,D=
BC_MSIC	bC=MSI,B=90,H=13,P=1,A=0,D=	bC=MSI,M=254,H=13,P=1,A=0,D=
BC_MSIC1	-	-
BC_MSIC2	-	-
BC_PSN5	bC=PSN5,B=40,H=3,A=0,D=	bC=PSN5,M=423,H=3,A=0,D=
BC_PSN9	bC=PSN9,B=65,H=3,A=0,D=	bC=PSN9,M=423,H=3,A=0,D=
C128A_00*		bC=128A,H=5,A=0,M=212,D=
C128A_01*		bC=128A,H=5,A=0,M=212,R=90,D=
C128B_00*		bC=128B,H=5,A=0,M=212,D=
C128B_01*		bC=128B,H=5,A=0,M=212,R=90,D=
CD39C_00*		bC=39,P=1,H=5,A=0,M=212,D=
CD39C_01*		bC=39,P=1,H=5,A=0,M=212,R=90,D=
CD39_00*		bC=39,P=0,H=5,A=0,M=212,D=
CD39_01*		bC=39,P=0,H=5,A=0,M=212,R=90,D=
KUNAUNR	bC=128B,B=48,H=12,D=	bC=128B,B=48,H=12,D=
KUNAUPS	bC=128B,B=48,H=12,D=	bC=128B,B=48,H=12,D=
MBBARC	bC=128B,B=50,H=20,D=	bC=128B,B=50,H=20,D=
MBBARC1	bC=E8,B=48,H=12,D=	bC=E8,B=48,H=12,D=
RSNUM	bC=128B,B=48,H=12,D=	bC=128B,B=48,H=12,D=
RSPOS	bC=128B,B=48,H=12,D=	bC=128B,B=48,H=12,D=
RUECKNR	bC=128B,B=48,H=12,D=	bC=128B,B=48,H=12,D=

Table 39: Predefined Print Controls (Printer Barcodes)

* The listed values are suggestions and can vary per application.

20 Data Flow when using SWIN Device Type

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.

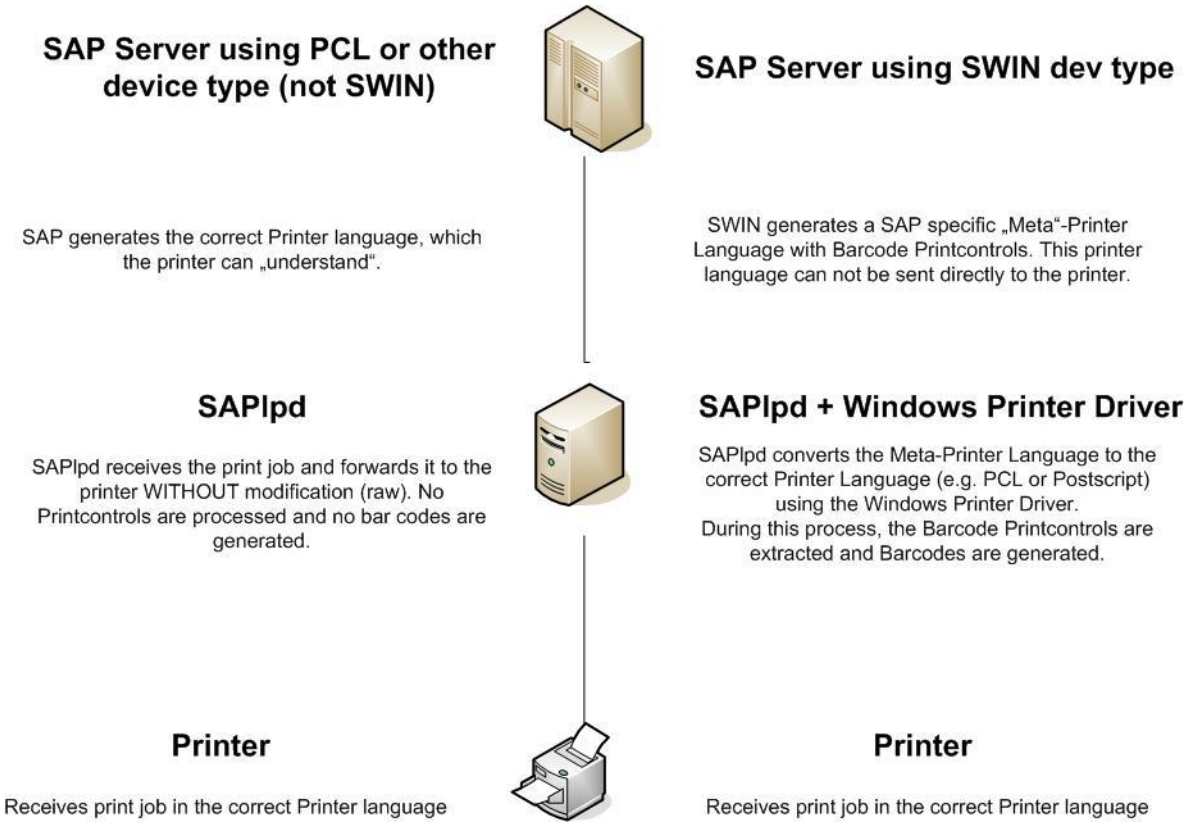


Figure 24: Data Flow SWIN Device Type

Note that in newer SAP systems, SAPSprint takes over the part of SAPlpd (same functionality).

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 SAPSprint or SAP GUI (via SAPWIN.DLL). Only through the SAPWIN “intermediate format” Windows printer drivers can be used ultimately.

21 DefaultSet Values

The information in this chapter applies if you want to use presets (a set of default values) for designated bar code parameters.

The parameter `DefaultSet=1` in the file `barcode.ini` activates the default settings listed below. These settings are based on industry-standard values and should produce a readable barcode on most printers.

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

Please note:

- The default module width is only used, if the parameter B= is not set in the print control.
- The default height is only used, if the parameter H= is not set in the print control.
- The default text option is only 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 (if not present).
- For EAN / UPC bar codes it is possible to adapt the characteristics of the human readable text (font, font size…) 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 presets of Default Set 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
Australia Post Custom Australia Post Reply Paid	0.470	5.0	N
Brazilian CEPNet	0.577	3.2	N
CodaBar 2	0.254	10.2	N
Codablock F	0.254	Row height = 5.64mm	N
Code 128 (A/B/C/Auto)	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
DP Identcode DP Leitcode	0.423	25.4	J
EAN13	0.339	21.9	J
EAN13P2	0.339	21.9	J
EAN13P5	0.339	21.9	J
EAN8	0.339	17.6	J
EAN8P2	0.339	17.6	J
EAN8P5	0.339	17.6	J

GS1 Composite Symbology	0.254	Height depends on module width and data content	N
GS1-128 / EAN128 / UCC128	0.254	10.2	N
GS1 DataBar: linear variants	0.254	10.2	N
GS1 DataBar: stacked variants	0.254	Height depends on module width and data content	N
ISBN 13	0.339	21.9	J
ISBN 13 + 5	0.339	21.9	J
Italian Postal 2of5, 3of9	0.254	10.2	N
Japanese Postal	0.577	3.5	N
Korean Postal	0.423	4.0	N
MAXICODE®	0.870	25.0	N
MSI	0.254	10.2	N
NVE-18	0.254	10.2	N
PDF417 PDF417 Truncated Default Row/Col Ratio = 11:1	0.254	Row height = 0.762mm	N
Planet 12, Planet 14	0.577	3.2	N
Plessey Plessey Bidirectional	0.254	10.2	N
USPS PostNet 10 (ZIP+4 = 9 digits)	0.577	3.2	N
USPS PostNet 5 (ZIP 5 digits)	0.577	3.2	N
PZN7, PZN8	0.254	10.2	N
Royal Mail 4 State Customer	0.550	5.1	N
Royal Mail 4 State Mailmark	0.550	5.1	N
Royal Mail 2D Mailmark	0.593	Height depends on module width and data content	N
UPCA	0.339	26.1	J
UPCA P2	0.339	26.1	J
UPCA P5	0.339	26.1	J
UPCE	0.339	10.2	Y
UPCE P2	0.339	10.2	Y
UPCE P5	0.339	10.2	Y
USPS Intelligent Mail® Barcode	0.577	3.7	N
USPS Intelligent Mail Package (IMpb)	0.339	20.0	J
VIN, FIN	0.254	10.2	N
2D Matrix Codes (Data Matrix, QR Code, Micro QR, Aztec Code)	1.016	25.4	N

Table 40: DefaultSet Values

22 2D Symbol Sizes

22.1 Aztec Code Symbol Sizes

This table shows the possible user defined symbol sizes for Aztec Code. The symbol size can be defined by the Print Control „**AZS**=Index". The column "Index" represents the value that defines the corresponding size.

Index	Symbol size (rows x cols)	Index	Symbol size (rows x cols)
0	automatic calculation	19	91 x 91
1	15 x 15	20	95 x 95
2	19 x 19	21	101 x 101
3	23 x 23	22	105 x 105
4	27 x 27	23	109 x 109
5	31 x 31	24	113 x 113
6	37 x 37	25	117 x 117
7	41 x 41	26	121 x 121
8	45 x 45	27	125 x 125
9	49 x 49	28	131 x 131
10	53 x 53	29	135 x 135
11	57 x 57	30	139 x 139
12	61 x 61	31	143 x 143
13	67 x 67	32	147 x 147
14	71 x 71	33	151 x 151
15	75 x 75	34	19 x 19 reader
16	79 x 79	35	23 x 23 reader
17	83 x 83	36	27 x 27 reader
18	87 x 87		

Table 41: Aztec Code Symbol Sizes

22.2 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 42: Data Matrix Symbol Sizes

22.3 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 43: QR-Code Symbol Sizes

22.4 Micro QR-Code Symbol Sizes (Versions)

This table shows the possible user defined symbol sizes for Micro QR-Code. You can set them by the print control `MQV=Index`. The column “Index“ represents the value that defines the corresponding size.

Index	Symbol size (rows x columns)
0	Automatic sizing
1	(M1) 11 x 11
2	(M1) 13 x 13
3	(M1) 15 x 15
4	(M1) 17 x 17

Table 44: Micro QR-Code Symbol Sizes

22.5 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		

Table 45: MicroPDF Symbol Sizes

23 Troubleshooting & FAQ

23.1 TEC-IT.COM FAQ Area

Please check out the FAQ below and please visit also our SAP FAQ web page, which is regularly updated. It can be reached under the following URL:

http://www.tec-it.com/en/support/faq/sap/barcode-dll/Default.aspx

23.2 How Can I Verify if TBarCode/SAPwin Was Installed Correctly?

23.2.1 SAPSprint, SAP GUI

If you are using SAPSprint or SAP GUI (via SAPWIN.dll) you can enable the *barcode log* file in order to see if the Barcode DLL was loaded. Please check out the next chapter: 23.3.1 TBarCode/SAPwin Log File “barcode.log” (page 67).

23.2.2 Check List

If no log file exists (SAPSprint), please check the following points:

- Do you have restarted SAPSprint or SAP GUI on your system (restarting is a must after installation)? Without a restart *TBarCode/SAPwin* is not loaded!
- Was *TBarCode/SAPwin* installed on your computer (client or server) successfully? Before barcodes can be printed *TBarCode/SAPwin* has to be installed on your computer.
- Check if the `Barcode.dll/Barcode64.dll` file can be found in the installation directory[4]. If this file is missing, please reinstall *TBarCode/SAPwin* and select the correct target folder.
- Check if the `Barcode.ini` is in the default location after setup (or alternatively in the same directory as the Barcode DLL) – see table below.

Operating System	Barcode.ini Directory
Windows 10/11, Windows Server 2016-2022	`C:\ProgramData\TEC-IT\TBarCode SAPwin\<version number>`

23.3 How Can I Turn On Logging for Trouble-Shooting?

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

- The TBarCode-log file „`BarCode.log`“
- The SAPSprint log files

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

23.3.1 TBarCode/SAPwin Log File “barcode.log”

You can enable the logging facility of TBarCode/SAPwin in the `Barcode.ini` file.

The following settings activate the logging (use one of both):

[4] The installation directory depends on the SAP printing component (SAPSprint, SAP GUI or SAPlpd directory)

Log all internal activities	Log with adjustable log level

`[DEBUG]`
`Level=1`
	`[LOG]`
	`Level=3`
	`File=1`

TBarCode/SAPwin creates the log-file named `BarCode.log` in the program data directory (like `barcode.ini`, see chapter 16.1)

It contains product configuration, license information, SAP print controls, bar code data and error messages.

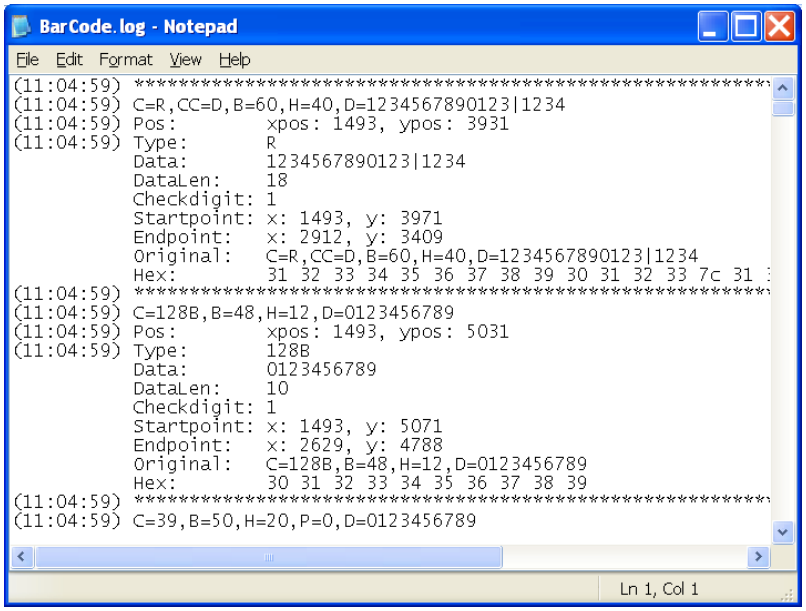


Figure 25: BarCode.log

➢ 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).

23.3.2 SAPSprint Log Files

You can help to find problems by enabling logging in SAPSprint. Here are the commands you need to enter on the command line (turn on logging with maximum log level):

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

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

Optional: 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
```

In newer SAPSprint versions you can use the tool „„SAPSprintOptEdit“ to set the logging options.

You should find the log files in the SAPSprint sub directory “Logs”.

23.3.3 Test Tool (SAP spool error log)

With the test tool you can enable logging the first 100 KB of print job data for a specific output device. The log can be viewed in the SAP output request log.

Enable the test tool:

- `SPAD ▶ Output Devices ▶ F8 (Change) ▶ SAP Menu ▶ Edit ▶ Test tool`



Figure 26: SPAD Test tool (Logging the first 100 KB)

Save your settings. Print the document you want to log. Then view the generated log as follows:

- `SAP Menu ▶ System ▶ Own spool requests`
- Double click the status field Compl. in the list of spool requests.
- Click the log icon:

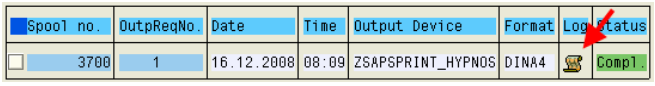


Figure 27: SPAD Test tool (Logging the first 100 KB)

- In the log for the output request click the button `All information`. Now you see the SAP spool error log with the Print request processing log (%SAPWIN% indicates the SAPWIN data format):

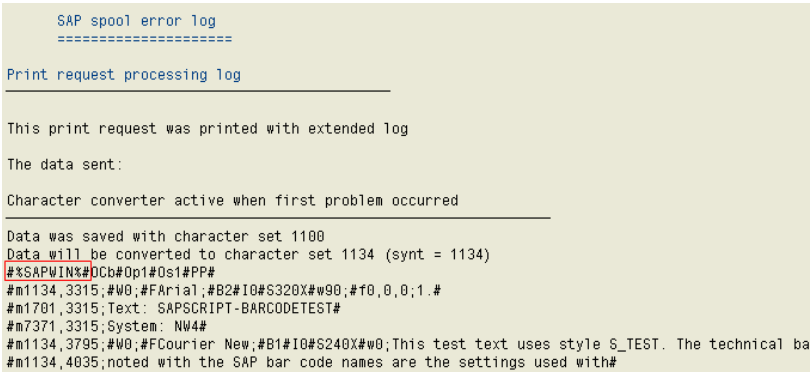


Figure 28: SPAD Test tool (Logging the first 100 KB)

Save the log to file:

- `SAP Menu ▶ System ▶ List ▶ Save ▶ Local File` (Format unconverted or Clipboard)

23.4 No Bar Codes Are Printed

23.4.1 Wrong Host Spool Access Method

Please make sure that you are using the correct host spool access method:

Access method	Description
S	Printing through SAP protocol through the SAPSprint service (e.g. on a print server). Barcodes are created by the Barcode.dll (TBarCode/SAPwin).
F	Front-end printing through SAP GUI (see also “G”) – only the default printer can be used.

G	Front-end printing on the SAP Client by using “Control Technology”. The SAPWIN interpreter "SAPWIN.dll" is loaded by SAP GUI and manages the print job processing. On demand SAPWIN.dll loads the Barcode.dll (TBarCode/SAPwin) for bar code generation.
U	With newer SAPSprint versions you can also use “U” in combination with a SAPWIN device type.

23.4.2 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*:

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

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

23.4.3 Wrong Device Type

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

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

23.4.4 Wrong Variant of Print Control Prefix

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

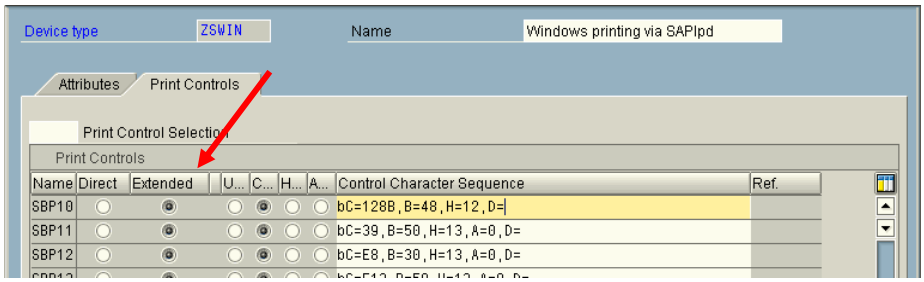


Figure 29: Print Control Settings

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.

23.4.5 Missing Visual Studio Runtime DLLs on the Target System

Specific Microsoft Visual Studio Runtime DLLs are required to operate the Barcode DLL. These are installed automatically with the setup program of TBarCode/SAPwin.

If you copy the Barcode DLL manually (or via script) into the SAP GUI, SAPSprint, or WWI directory, it can be that the required Runtime DLLs are missing on the target system and the Barcode DLL cannot 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 missing Runtime DLLs from Microsoft Visual C++ Redistributable Packages.

23.5 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.

23.6 I Can’t Define a Print Control With Variant 5 (SE73 Shows Variant 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.

23.7 Barcode Type is Always 2 of 5 Interleaved

23.7.1 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 2 of 5 IL.

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 (Introduction to Print Controls) and define the print control as you need it.

23.7.2 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“). For local printing use access method “F” and check your printer barcode settings with SE73.

23.8 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.

23.9 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 23.3 How Can I Turn On Logging for Trouble-Shooting?

23.10 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:

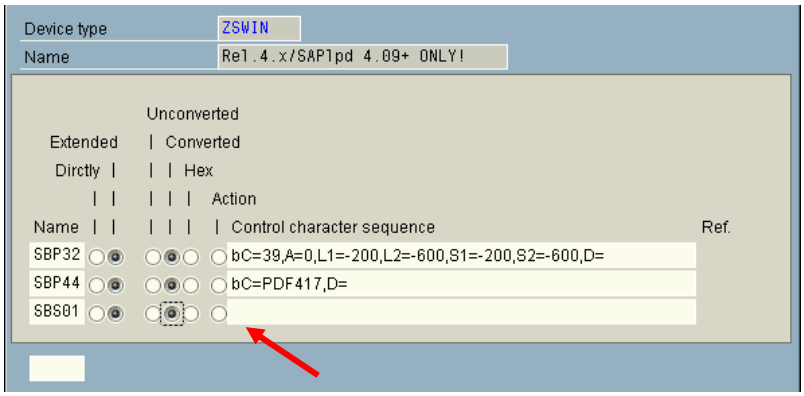


Figure 30: Correct Print Control Definition of SBS01

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.

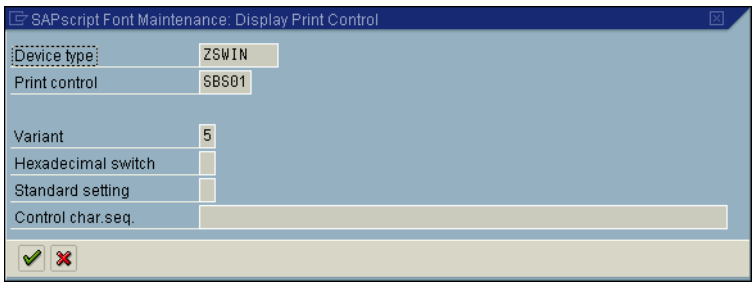


Figure 31: Correct Print Control Definition of SBS01 – Font Maintenance

23.11 How Can I Achieve Similar Results as With Barcode DIMM/SIMM Printer Extensions?

In the barcode.ini file adjust the following (red marked) settings:

```
[SETTINGS]
Direction=1
Shift=1
DefaultSet=1
DefFontName=Courier New
DefFontSize=9
DefFontWeight=bold
;OnError=Ignore
;OnNoData=Ignore
;DefModWidth=254
;DefGuardWidth=254
;DefBarWidthReduction=0
;DefOptResolution=1
;ConvertToSpace=

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

Now the default bar code settings match the settings of Barcode DIMM/SIMM modules.

Depending on the Windows printer driver (PCL or PostScript) the vertical printing position (passed from SAPSprint or SAP GUI to the Barcode DLL) can vary. To compensate this problem you can use the Shift parameter in the barcode.ini file to fine-tune the vertical position.

For almost all PCL printers you should set `Shift=1`

23.12 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.

23.13 How Can I Create a Silent Setup for Deployment in My Company?

Both of our available installation packages (EXE and MSI) offer a quiet option. The MSI package is available on request from our support@tec-it.com.

Call the MSI package with the following command line parameters:

```
msiexec /i TBarCode_SAPwin.msi ADDLOCAL=FeatBin /qn
```

This will install the Barcode DLL for SAPSprint/SAP GUI into the SAPSprint directory (which needs to be present on the target system).

You can suppress the feedback page during uninstall with the NO_UI property set to 0.

```
msiexec /x TBarCode_SAPwin.msi /qb NO_UI=0
```

More information about the silent setup options can be found in our TBarCode SAPwin Online FAQ

23.14 Why Is a Horizontal Bar Drawn Across the Barcodes?

This can occur if

- The printer driver has a problem (see 23.4.2)
- You 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.

23.15 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`.

23.16 The Wrong Paper Tray is Used

23.16.1 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.

23.16.2 Solutions

The Barcode DLL doesn't have a direct influence to the tray control. The Barcode DLL is called from SAPsprint 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.

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 `SAPSprint` version

23.17 No Frontend Printing Possible With SAPSprint

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

Check out SAP Note 821519 - Front-end printing with control technology.

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

- SAPSprint is a spooling software and is not intended to be used for front-end printing.
- Frontend printing with Method F and G is done via SAP GUI (method “G” is using SAPFprint).

23.18 How to Encode More Than 70 Characters in a 2D Barcode?

SAPscript, but also Smart Forms has a maximum limit of 70 characters[5] 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.

See also our Online FAQ: http://www.tec-it.com/support/faq/sap/barcode-dll.aspx

23.19 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 46: 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 47: Flattermarken Sample (part 2)

23.20 How to Change the Vertical Alignment of the Barcodes?

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.

23.20.1 Solution

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

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

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

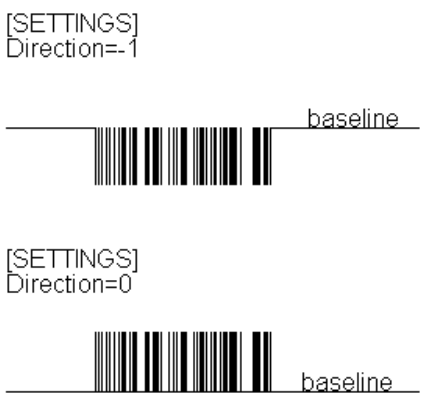


Figure 32: Barcode Printing Direction (adjusted in Barcode.ini)

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

➢ To see the changes, a restart of SAP GUI, SAPSprint or WWI is required.

23.21 How Can I Adjust the Barcode Width?

You can choose from three options:

- In the print control prefix (edit with SE73 – Printer Bar Codes, device type ZSWIN) you can adjust the parameter **B=WIDTH** to set the total width of the symbol in mms.
- In the print control you can also use the parameter **M=Module Width** (M=254 adjusts the module width to 0.254 mm). This works only if you don’t have specified the B parameter. The module width also influences the total width of the symbol. The width increases with the number of encoded data characters in the symbol.
- You can decide to use bar code presets (set **DefaultSet=1** in the barcode.ini file). In this case don't specify the B and M parameter in the print control (see page 44 + 50). The activated default set correspond to common used hardware extensions for bar code printing.

23.22 How Can I Use GS1 Application Identifiers (FNC1)?

Application Identifiers are used in the barcode symbols GS1-128 (former EAN-128/UCC-128), GS1 DataBar, GS1 Data Matrix and also in some other 2D codes.

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 GS1-128, 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.

23.22.1 Sample GS1-128 prefix

Parameter	Value
Variant	5
Hex-switch	On
Print control (HEX)	62433D453132382C253D212C413D312C423D37362C483D32352C443D
Print control (ASCII)	bC=G128,%=!,A=1,B=76,H=25,D=

Table 48: GS1-128 Sample (part 1)

GS1 codes are 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.

23.22.2 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 parenthesis "(…)" are automatically determined by *TBarCode/SAPwin*
Print-Control (ASCII)	bC=G128,%=!,A=1,B=76,H=25,D=

Table 49: GS1-128 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 parenthesis "(…)" are automatically determined by TBarCode/SAPwin

Table 50: GS1-128 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.

23.23 I Get the Error Message "Service 515 in Use"

SAPSPrint wants to use TCP port 515 at startup. As another process is already using this port, a conflict arises and the above error is displayed.

This can have the following causes:

- 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 SAPsprint.

➢ If the problem occurs with SAPSprint you can adjust the TCP port during setup of SAPSprint (or in the SAPSprintOptEdit utility).

23.24 Is It Possible to Use the Same Output Device in SAP for All Users?

23.24.1 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.

23.24.1.1 Local printing

You have to install *TBarCode/SAPwin* on each client which wants to print barcodes.

Use device type `ZSWIN` (or the name of your `SWIN`-copy).

Spool Administration: For SAPFprint (SAP GUI) use access method `G` (Gui).

Usually the default printer is in use on the client (but you can also adjust every arbitrary printer which is available on the client)

Defining an Output Device for Front-End Printing (SAP GUI for Windows)

23.24.1.2 Central printing

SAPSprint 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.

Remote Printing (Access Methods S and U)

Defining an Output Device for Remote Printing on Microsoft Windows PCs

23.24.2 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.

Editing Device Types

23.25 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*.

The System ID can be retrieved with a special utility which is available upon request from TEC-IT Support (support@tec-it.com).

23.26 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 program data path (see chapter 23.2 How Can I Verify if TBarCode/SAPwin Was Installed Correctly?),
- the same directory as the “Barcode.dll” program file (refer to the installation path of *TBarCode/SAPwin*),

As soon as the Barcode DLL is reloaded after a restart of SAP GUI, SAPSprint or WWI, the Barcode.ini file is also reloaded. If the correct licence information is available in the file, the “demo” imprint on the barcode is deactivated.

The license data section in the BarCode.ini File contains the following information:

`License_Product` — The product code

2030	1D license for linear bar codes (Code 2 of 5, Code 128, Code 39, EAN, UPC…)
2031	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` — Number of licenses

`Licence_Key` — License key

24 Supported Barcodes

The following is a summary of the supported bar code types. The bar codes can be activated via the Print controls described in 13.2.1.

Further details about bar codes can be found in our Barcode Reference (PDF)

24.1 Linear Bar Codes (1D)

Barcode	Description
CodaBar 2 Widths	CodaBar (2 Width), CodaBar2
Code 2OF5 IATA	Code 2 of 5 IATA Version (International Air Transport Association)
Code 2OF5 Industry	Code 2 of 5 Industry Version
Code 2OF5 Interleaved	Code 2 of 5 Interleaved (alias ITF or Code 2/5 IL),
Code 2OF5 Matrix	Code 2 of 5 Matrix (alias 2of5 Standard)
Code 2OF5 Standard	Code 2 of 5 (identical with Code 2 of 5 Matrix)
Code 32	Code 32 (Italian Pharmacode)
Code 39	Code 3 of 9 alias Code-39
Code 39 Full ASCII	Code 3 of 9 Extended Version (ASCII)
Code 93	Code 93
Code 93 Full ASCII	Code 93 Extended Version (ASCII)
Code128	Code-128 all sub sets and Compressed Mode
Code128A	Code 128 Subset A
Code128B	Code 128 Subset B
Code128C	Code 128 Subset C
EAN8	EAN-8 (also JAN or IAN)
EAN8P2	EAN-8 (also JAN or IAN) with 2 digit add-on
EAN8P5	EAN-8 (also JAN or IAN) with 5 digit add-on
EAN13	EAN-13 (also JAN or IAN),
EAN13 P2	EAN-13 (also JAN or IAN) with 2 digit add-on
EAN13 P5	EAN-13 (also JAN or IAN) with 5 digit add-on
EAN14	EAN-14 (GTIN coded with GS1/EAN-128 symbology)
EAN128	EAN-128 alias UCC-128 alias GS1-128
Flattermarken	Flattermarken (identification marks used in book production).
GS1-128	GS1-128, identical to EAN-128 / UCC-128
GS1-DataBar	GS1-DataBar Symbologies
ISBN-13	ISBN-13 (International Standard Book Number, 13 digits)
ISBN13-P5	ISBN13 with 5 digit supplement
ISMN	ISMN (International Standard Music Number)
ISSN	ISSN (International Standard Serial Number)
ISSN P2	ISSN with 2 digit supplement
ITF-14	ITF14, Code 2of 5 Interleaved (14 digits)
LOGMARS	DOD Logmars, Department of Defense Logmars
MSI	MSI Barcode variants with different check digits
Pharmacode One-Track	Pharmacode One Track (1 Track)
Pharmacode Two-Track	Pharmacode Two Track (2 Track)
PLANET 12 Digit	Planet Code 12 digits (Postal Alpha Numeric Encoding Technique)
PLANET 14 Digit	Planet Code 14 digits

Plessey	Plessey Unidirectional
Plessey Bidirectional	Plessey Bidirectional
PZN7	German Pharmazentralnummer 7 digits (PZN/PZN7)
PZN8	German Pharmazentralnummer 8 digits (PZN8); successor of PZN7 in 2013
GS1 DataBar Expanded	GS1 DataBar Expanded
GS1 DataBar Limited	GS1 DataBar Limited
GS1 DataBar	GS1 DataBar
GS1 DataBar Truncated	GS1 DataBar Truncated
GS1 DataBar Limited	GS1 DataBar Limited
SSCC-18	SSCC 18 Shipping Container Code
Telepen	Telepen
Telepen Alpha	Telepen Alphanumeric
UCC/EAN-128	UCC/EAN 128
UCC-128	UCC 128
UPC12 / UPCA	UPC 12 (alias UPC-A),
UPC-A	UPC A (alias UPC-12),
UPC-A P2	UPC Version A + 2 digit supplement
UPC-A P5	UPC Version A + 5 digit supplement
UPC-E	UPC Version E
UPC-E P2	UPC Version E + 2 digit supplement
UPC-E P5	UPC Version E + 5 digit supplement
UPCSCC	UPC Shipping Container Code (refer to ITF14, SCC-14)
VIN / FIN	Vehicle Identification Number, Fahrzeug-Identifizierungsnummer

Table 51: Supported Linear (1D) Bar Codes

24.2 Postal Codes (1D)

Barcode	Description
Australian Post Custom	Australian Post Standard Customer, Customer2, Customer 3
Australian Post Redirect	Australian Post Redirection
Australian Post Reply Paid	Australian Post Reply Paid
Australian Post Routing	Australian Post Reply Routing
Brazilian CEPNet	Brasilianischer Post-Barcode
DAFT Code	DAFT is an artificial generic code
DPD Code	German Parcel Service Label Code
DP Identcode	Deutsche Post Identcode
DP Leitcode	Deutsche Post Leitcode
Italian Postal 2of5	Italian Postal Code (based on 2of5 IL)
Italian Postal 3of9	Italian Postal Code (based on Code 39)
Japan Post	Japan Postal 4-State Bar Code
KIX	Dutch Postal Barcode
Korean Postal Authority	Korean Postal Barcode
RoyalMail 4State (RM4SCC)	Royal Mail 4 State Barcode (RM4SCC)
USPS OneCode (4-CB)	see USPS Intelligent Mail® Barcode
USPS Intelligent Mail® Barcode	USPS Intelligent Mail® Barcode, alias USPS OneCode / 4-State Customer Barcode
USPS Intelligent Mail® Package	USPS Intelligent Mail® Package Barcode
USPS PostNet5	USPS PostNet ZIP (5 digits) with check digit computation
USPS PostNet9	USPS PostNet ZIP+4 (9 digits) with check digit computation
USPS PostNet11	USPS PostNet ZIP+4+2 (11 digits) with check digit computation

Table 52: Supported Postal Barcodes (1D)

24.3 Two-Dimensional Codes (2D Barcodes)

Barcode	Description
Aztec Code	Aztec Code (available in TBarCode/SAPwin Version 8+)
Codablock-F	CodablockF (Stacked Code128), used by HIBC
Data Matrix	Data Matrix (ECC200 standard with error correction)
DP Postmatrix	Deutsche Post Werbeantwort Postmatrix
GS1 Data Matrix	Data Matrix with GS1 format (ECC200, FNC1), Auto Compaction
GS1 QR Code	QR Code with GS1 format
MaxiCode™	Maxi Code™ (used by UPS®)
Micro QR-Code	Micro QRCode (Micro Quick Response Code, available in TBarCode V9 & Barcode Studio V9)
MicroPDF417	Micro PDF-417, MicroPDF
PDF417	PDF-417 (used by VDA, GTL, ODETTE, VDA Belom...),
PDF417 Truncated	PDF-417 Truncated Version
QR-Code JIS	Quick Response Code (ISO/IEC 18004:2000); uses 932 / Shift-JIS character set
QR-Code ISO / 2015	QR Code 2015 (ISO/IEC 18004:2015); uses Latin-1 (ISO-5589-1) as standard char set
Swiss QR Code	Swiss QR Code
GS1 DataBar Stacked	GS1 DataBar Stacked
GS1 DataBar Stacked Omnidir	GS1 DataBar Stacked Omnidirectional
GS1 DataBar Expanded Stacked	GS1 DataBar Expanded Stacked

Table 53: Supported Two-Dimensional Codes (2D)

24.4 HIBC Barcodes

Barcode	Description
HIBC LIC 128	HIBC LIC variant of Code 128
HIBC LIC 39	HIBC LIC variant of Code 39
HIBC LIC Codablock-F	HIBC LIC variant of Codablock-F
HIBC LIC Data Matrix	HIBC LIC variant of Data Matrix
HIBC LIC MicroPDF417	HIBC LIC variant of MicroPDF417
HIBC LIC PDF417	HIBC LIC variant of PDF417
HIBC LIC QR-Code	HIBC LIC variant of QR-Code
HIBC PAS 128	HIBC PAS variant of Code 128
HIBC PAS 39	HIBC PAS variant of Code 39
HIBC PAS Codablock-F	HIBC PAS variant of Codablock-F
HIBC PAS Data Matrix	HIBC PAS variant of Data Matrix
HIBC PAS MicroPDF417	HIBC PAS variant of MicroPDF417
HIBC PAS PDF417	HIBC PAS variant of PDF417
HIBC PAS QR-Code	HIBC PAS variant of QR-Code

Table 54: Supported HIBC Bar Codes

24.5 GS1 Composite Variants (2D Codes)

Barcode	Description
GS1 DataBar	Composite Component CC-A / CC-B

GS1 DataBar Stacked	Composite Component CC-A / CC-B
GS1 DataBar Stacked Omnidirectional	Composite Component CC-A / CC-B
GS1 DataBar Limited	Composite Component CC-A / CC-B
GS1 DataBar Expanded	Composite Component CC-A / CC-B
GS1 DataBar Expanded Stacked	Composite Component CC-A / CC-B
EAN 13	Composite Component CC-A / CC-B
EAN 8	Composite Component CC-A / CC-B
UPC A	Composite Component CC-A / CC-B
UPC E	Composite Component CC-A / CC-B
GS1-128	Composite Component CC-A / CC-B / CC-C

Table 55: Supported Composite Codes (2D)

24.6 Related Symbologies

With the previously listed symbologies you can create the following variants as well:

- USS Code 39
- AIAG
- PPN-Code
- NTIN-Code (GS1)
- USS Code 128, UCC-128, ISBT-128
- SCC-14
- JAN
- Bookland
- USS ITF 2-5, I-2/5, ITF-14, SSC-14, DUN14
- USPS
- DOD Logmars (Department of Defense Logmars)
- UPC SCS (UPC Serial Shipping Symbol).

25 Version Information

Please check out the version history on the tec-it.com web site:

https://www.tec-it.com/software/sap/barcode-dll/history.aspx

26 Contact and Support Information

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