SAP Device Driver for SATO Printers

User Manual

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Introduction 1

"SAP Device Driver for SATO printers" is an SAP Smart Forms printing solution to SATO printers. It allows users to use a driver for a Page Description Language (PDL) that is implemented in Advanced Business Application Programming (ABAP) and resided in the SAP environment to print SATO printer without 3rd party solutions. With this device driver, SATO Barcode Printer Language (SBPL) is sent to the SATO printer directly from the SAP system –- providing greater performance and efficiency.

This document explains the necessary environment and configuration to use such a solution.

SAP Environment 2

The following SAP environment supports the ABAP based PDL drivers:

- SAP_BASIS Release 6.20:
  Support Package SAPKB62064 + attached correction instructions or
  Support Package SAPKB62065 + attached correction instructions
  or Support Package SAPKB62066
  Kernel 6.40 patch level 222

- SAP_BASIS Release 6.40:
  Support Package SAPKB64022 + attached correction instruction
  or Support Package SAPKB64023
  Kernel 6.40 patch level 222

- SAP_BASIS Release 7.00:
  Support Package SAPKB70014 + attached correction instruction
  or Support Package SAPKB70016
  Kernel 7.00 patch level 148

- SAP_BASIS Release 7.01:
  supported from the beginning

- SAP_BASIS Release 7.10:
  not supported in 7.10

- SAP_BASIS Release 7.11 and higher:
  supported from the beginning

Please refer to the SAP Notes: 1097563 for the updated information about the overview of the SAP PDL driver.

Overview of Solution

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This solution is primarily for Smart Forms printing. It requires 2 components from the printer providers, such as SATO.

- ABAP Based PDL device driver
- Device Type files

After uploading the components into the SAP system, users will

- Use Smart Styles to define the available printing items in the device type,
- Use Smart Forms to design the label
- Define Output Device that points to the given Device Type
- Print the Smart Forms through the output device.

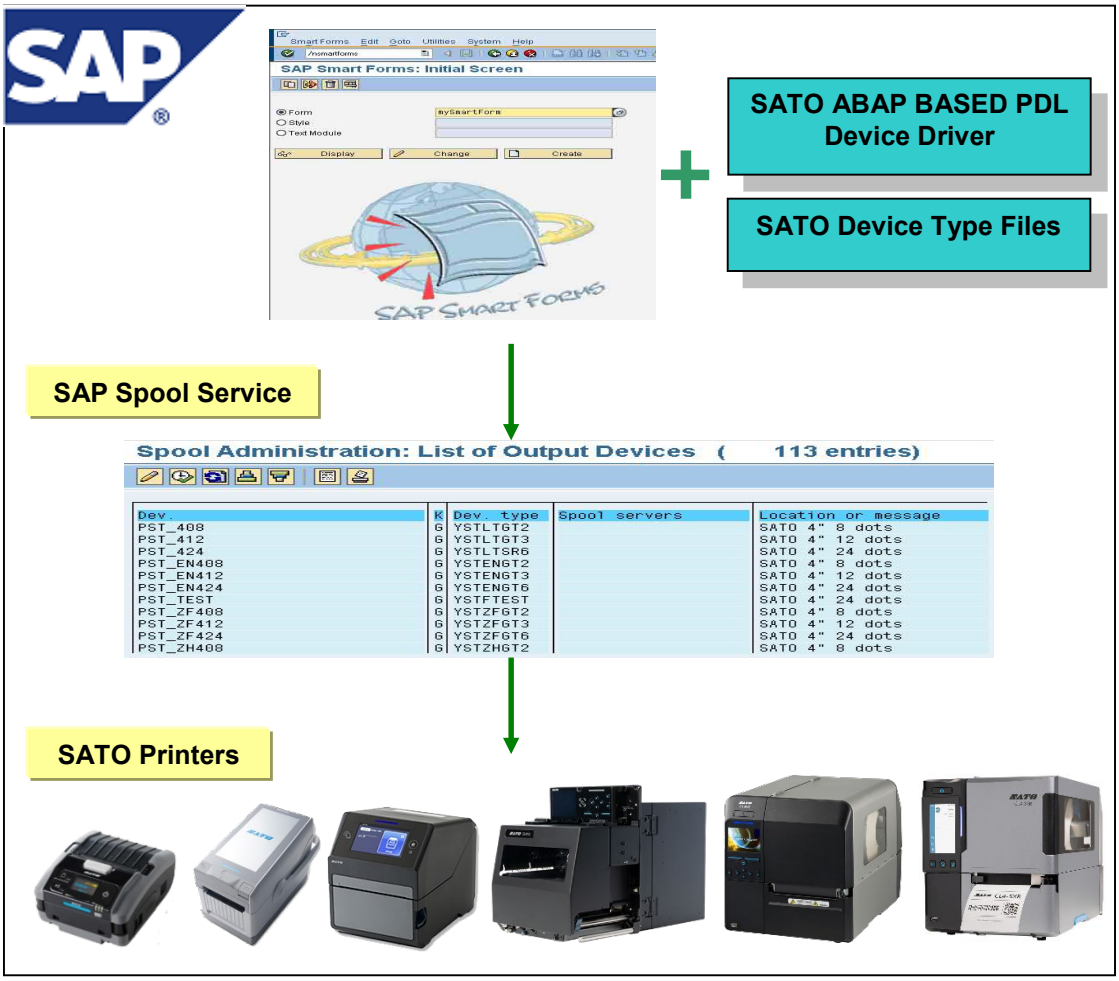

Figure 1 Overview of solution

Please refer to the SAP Notes: 1135106 for the updated information about the SATO PDL Driver.

Using SATO Device Type

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The following device types for SATO PDL Driver are available:

Codepage	Name of Device Type	Resolution	Supported Models
Latin1 (ISO8859-1)	YSTLTGT2	203dpi	LT408 MB400i **S84-ex 203dpi **S86-ex 203dpi
	YSTLTGT3	305dpi	MB410i **S84-ex 305dpi **S86-ex 305dpi
	YSTLTGT6	609dpi	**S84-ex 609dpi
	YSTLTSR2	203dpi	*PT408e *MR400e *CL4NX-J/CL4NX-J Plus 203dpi *CL6NX-J/CL6NX-J Plus 203dpi *CT4-LX-J/HC4-LX-J 203dpi *PW4NX-J 203dpi *CL4-SXR TT203 (JP) *CL6-SXR TT203 (JP)
	YSTLTSR3	305dpi	*PT412e *MR410e *SG112T/R/ex *CL4NX-J/CL4NX-J Plus 305dpi *CL6NX-J/CL6NX-J Plus 305dpi *CT4-LX-J/HC4-LX-J 305dpi *CL4-SXR TT305 (JP) *CL6-SXR TT305 (JP)
	YSTLTSR6	609dpi	*CL4NX-J/CL4NX-J Plus 609dpi *CL4-SXR TT609 (JP)
	YSTLTHR6	609dpi	HR224
	YSTLTCN2	203dpi	**CL4NX/CL4NX Plus 203dpi **PW208NX/PW208mNX **CT4-LX/CT4-LX-HC/HC4-LX 203dpi **S84NX 203dpi **PW4NX 203dpi **CL4-SXR TT203 **CL6-SXR TT203
	YSTLTCN3	305dpi	**CL4NX/CL4NX Plus 305dpi **FX3-LX **CT4-LX/CT4-LX-HC/HC4-LX 305dpi **S84NX 305dpi **CL4-SXR TT305 **CL6-SXR TT305
	YSTLTCN6	609dpi	**CL4NX/CL4NX Plus 609dpi **S84NX 609dpi **CL4-SXR TT609

Codepage	Name of Device Type	Resolution	Supported Models
English Only (7-Bit USA ASCII)	YSTENGT2	203dpi	**S84-ex 203dpi **S86-ex 203dpi LT408
	YSTENGT3	305dpi	**S84-ex 305dpi **S86-ex 305dpi
	YSTENGT6	609dpi	**S84-ex 609dpi
	YSTENSR2	203dpi	*MR400e *CL4NX-J/CL4NX-J Plus 203dpi *CL6NX-J/CL6NX-J Plus 203dpi *CT4-LX-J/HC4-LX-J 203dpi *PW4NX-J 203dpi *CL4-SXR TT203 (JP) *CL6-SXR TT203 (JP)
	YSTENSR3	305dpi	*MR410e *SG112T/R/ex *CL4NX-J/CL4NX-J Plus 305dpi *CL6NX-J/CL6NX-J Plus 305dpi *CT4-LX-J/HC4-LX-J 305dpi *CL4-SXR TT305 (JP) *CL6-SXR TT305 (JP)
	YSTENSR6	609dpi	*CL4NX-J/CL4NX-J Plus 609dpi *CL4-SXR TT609 (JP)
	YSTENHR6	609dpi	HR224
	YSTENCN2	203dpi	**CL4NX/CL4NX Plus 203dpi **PW208NX/PW208mNX **CT4-LX/CT4-LX-HC/HC4-LX 203dpi **S84NX 203dpi **PW4NX 203dpi **CL4-SXR TT203
	YSTENCN3	305dpi	**CL4NX/CL4NX Plus 305dpi **FX3-LX **CT4-LX/CT4-LX-HC/HC4-LX 305dpi **S84NX 305dpi **CL4-SXR TT305
	YSTENCN6	609dpi	**CL4NX/CL4NX Plus 609dpi **S84NX 609dpi **CL4-SXR TT609
Europe Characters (Codepage 850)	YSTCPCL2	203dpi	CT408i M84-Pro2 CG208, CG408 WS408 **CL6NX/CL6NX Plus 203dpi **S86NX 203dpi **CL6-SXR TT203
	YSTCPCL3	305dpi	CT412i M84-Pro3 CG212, CG412 WS412 **CL6NX/CL6NX Plus 305dpi **S86NX 305dpi **CL6-SXR TT305
	YSTCPCL6	609dpi	M84-Pro6

Codepage	Name of Device Type	Resolution	Supported Models
Japanese (Shift-JIS) + English (7-Bit USA ASCII)	YSTJAPT2	203dpi	*PT408e
	YSTJAPT3	305dpi	*PT412e
	YSTJASR2	203dpi	*CL4NX-J/CL4NX-J Plus 203dpi *CL6NX-J/CL6NX-J Plus 203dpi *CT4-LX-J/HC4-LX-J 203dpi *PW4NX-J 203dpi *CL4-SXR TT203 (JP) *CL6-SXR TT203 (JP)
	YSTJASR3	305dpi	*SG112T/R/ex *CL4NX-J/CL4NX-J Plus 305dpi *CL6NX-J/CL6NX-J Plus 305dpi *CT4-LX-J/HC4-LX-J 305dpi *CL4-SXR TT305 (JP) *CL6-SXR TT305 (JP)
	YSTJASR6	609dpi	*CL4NX-J/CL4NX-J Plus 609dpi *CL4-SXR TT609 (JP)

Table 1 Device Types

Note: * denotes Japanese models

Note: ** denotes printer models that should have the LABEL_SIZE value described in Smart Forms when printing. For finding out more regarding filling out the label's width and height, please refer to Section *6.5.2* and *Figure 60* of this document. The label width value using YSTCPCL2 device type should be 1216 and the value needs to be 1824 when using YSTCPCL3 device type when printing using the 6-inch label.

Printer Model	Supported Languages	Device Type
PW4NX	Latin1 (ISO8859-1)	YSTLTCN2
	English (ASCII characters)	YSTENCN2
CL4NX/CL4NX Plus xxxdpi PW208NX/PW208mNX FX3-LX CT4-LX/CT4-LX-HC/HC4-LX S84NX xxxdpi CL4-SXR TTxxx	Latin1 (ISO8859-1)	YSTLTCNx
	English (ASCII characters)	YSTENCNx
CL6NX/CL6NX Plus xxxdpi CL4xxe/CL6xxe S86NX xxxdpi CL6-SXR TTxxx	European Characters (codepage 850)	YSTCPCLx
S84-ex	Latin1 (ISO8859-1)	YSTLTGTx
	English (ASCII characters)	YSTENGTx
S86-ex	Latin1 (ISO8859-1)	YSTLTGTx
	English (ASCII characters)	YSTENGTx
LT408	Latin1 (ISO8859-1)	YSTLTGTx
	English (ASCII characters)	YSTENGTx
MB4xxi	Latin1 (ISO8859-1)	YSTLTGTx
	English (ASCII characters)	YSTENGTx
M84-Pro	European Characters (codepage 850)	YSTCPCLx
CT4xxi	European Characters (codepage 850)	YSTCPCLx
CG2xx/CG4xx	European Characters (codepage 850)	YSTCPCLx
HR224	Latin1 (ISO8859-1)	YSTLTHR6
	English (ASCII characters)	YSTENHR6
WS408	European Characters (Codepage 850)	YSTCPCL2
WS412	European Characters (Codepage 850)	YSTCPCL3

rinter Model	Supported Languages	Device Type
*SG112T/R/ex	Latin1 (ISO8859-1)	YSTLTSRx
	English (ASCII characters)	YSTENSRx
	Japanese (Shift-JIS) + English (ASCII)	YSTJASRx
*PT4xxe	Latin1 (ISO8859-1)	YSTLTSRx
	Japanese (Shift-JIS) + English (ASCII)	YSTJASRx
*CL4NX-J xxxdpi *CL4NX-J Plus xxxdpi *CT4-LX-J xxxdpi *HC4-LX-J xxxdpi *CL4-SXR TTxxx (JP)	Latin1 (ISO8859-1)	YSTLTSRx
	English (ASCII characters)	YSTENSRx
	Japanese (Shift-JIS) + English (ASCII)	YSTJASRx
*CL6NX-J xxxdpi *CL6NX-J Plus xxxdpi *CL6-SXR TTxxx (JP)	Latin1 (ISO8859-1)	YSTLTSRx
	English (ASCII characters)	YSTENSRx
	Japanese (Shift-JIS) + English (ASCII)	YSTJASRx
*PW4NX-J	Latin1 (ISO8859-1)	YSTLTSR2
	English (ASCII characters)	YSTENSR2
	Japanese (Shift-JIS) + English (ASCII)	YSTJASR2

Table 2 Supported Languages of Device Types

Note: * denotes Japanese models (YSTJAxxx version also support English ASCII font)

The instruction of importing the PDL Device Driver can be found in the SAP Wizard Note:
Note 1103422 - SAP Printer Vendor program: Installing device types, etc.

Copy the transport files to the proper locations in the SAP system:
a. Copy the K*.PDT to the Cofile folder located at \usr\sap\trans\cofile
b. Copy the R*.PDT to the Data folder located at \usr\sap\trans\data

Log on to the SAP ECC Dev System and open transaction STMS (Browse or type “STMS” in the transaction code area)

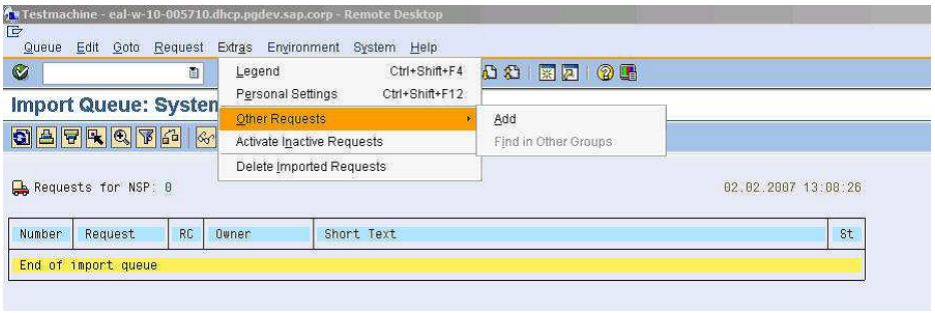

Figure 2 Adding transport request for PDL Device Driver

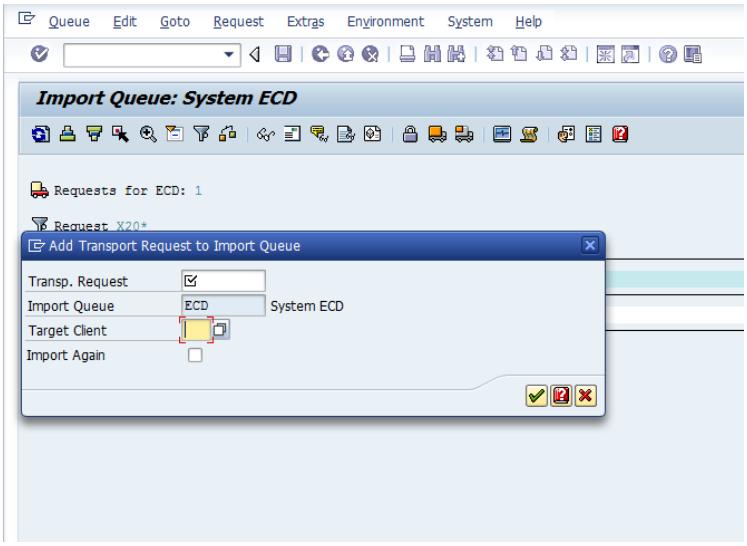

Figure 3 Enter target client and search for transport request

Search for the desired transport using the *wildcard selection and the transport file name (do not include the .PDT extension)

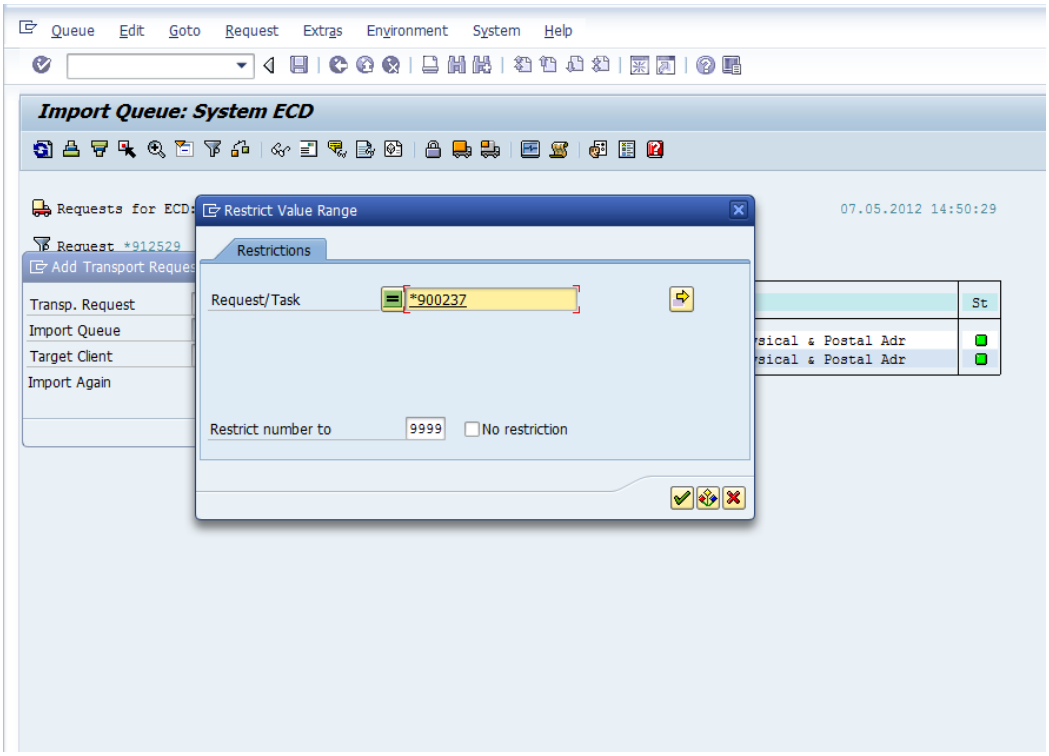

Figure 4 Search for transport file name

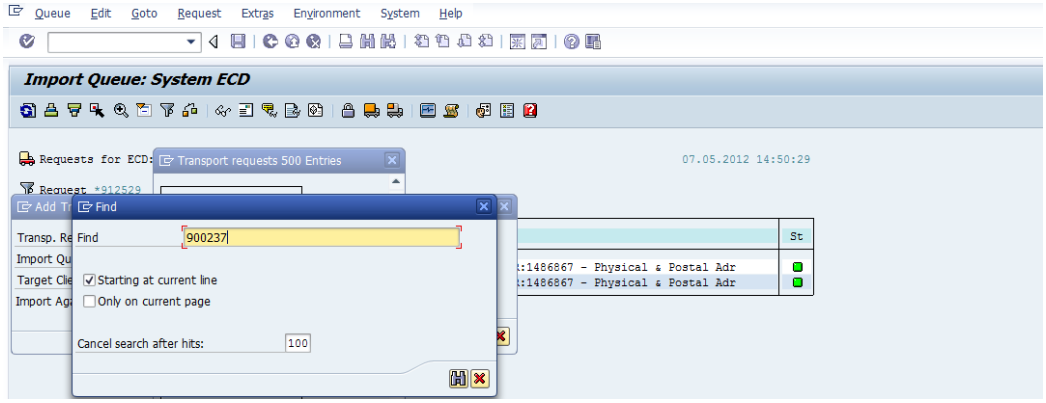

Figure 5 Identify desire transport number

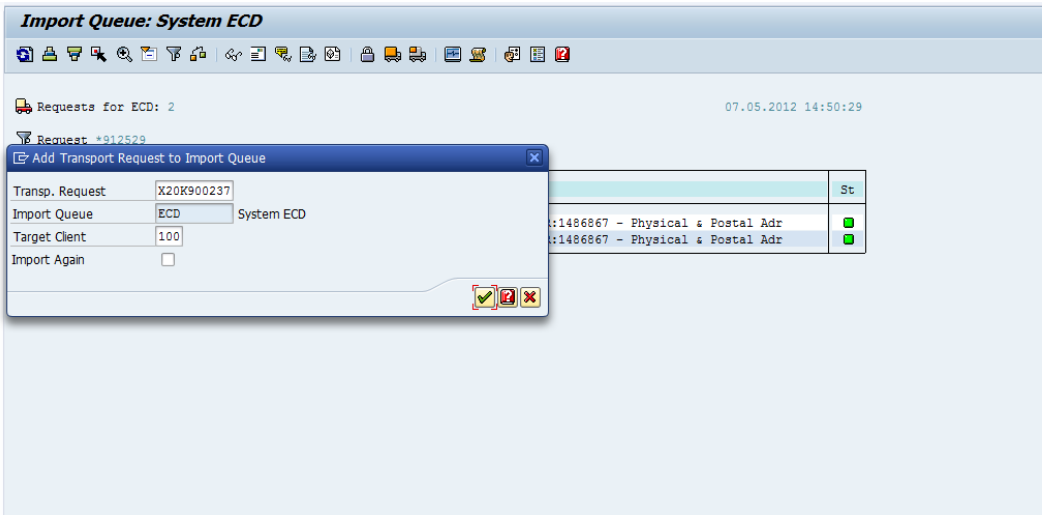

Figure 6 Verify transport request

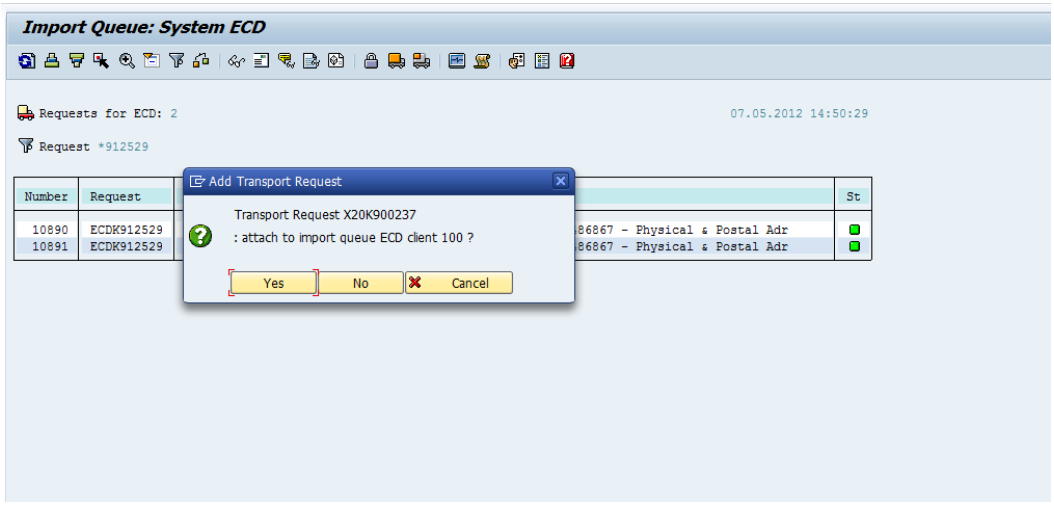

Figure 7 Confirm the transport request by click on the Yes button

The SATO Device Type has to be uploaded into the SAP system by using the program '***RSTXSCRP'*** in the transaction code '***se38***'.

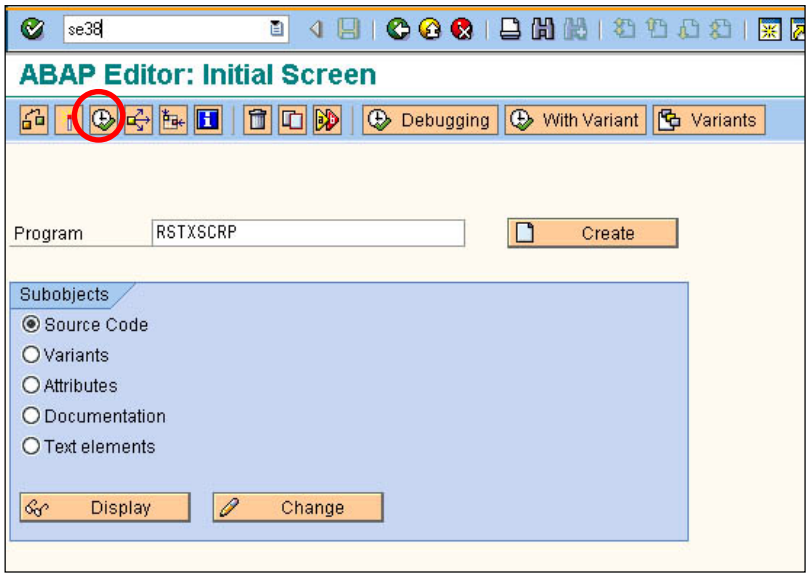

Figure 8 Uploading SATO Device Type

Click 'F8' to execute the command. The following screen will be displayed:

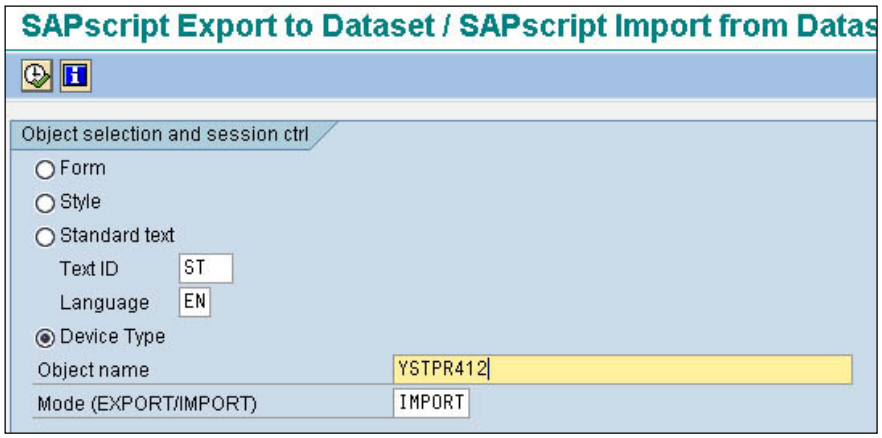

Figure 9 Importing Device Type file

Click on the radio button on 'Device Type'. Change the Mode (EXPORT/IMPORT) to 'IMPORT'. Then key in a name to represent the Device Type.

Note: The name must start with 'YST'. It should contain 8 characters. The object name must match with the file name of the device type (without the extension).

Click the Execute button (F8) to continue.

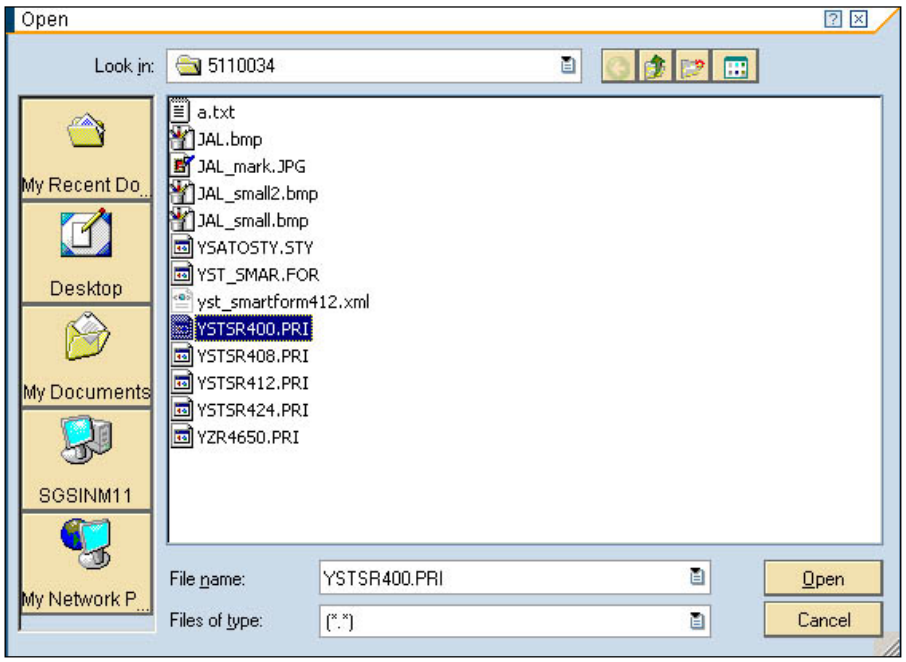

Figure 10 Selecting device type file

Creating Output Device

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Enter '/nspad' transaction code to go to the Spool Administration application.

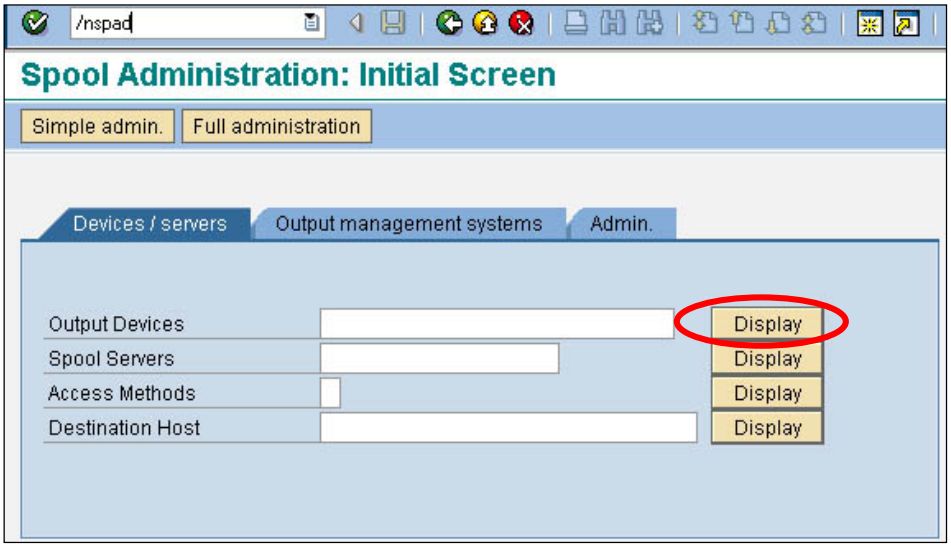

Figure 11 Creating Output Device

Under the Devices/Servers tab, click on the "Display" button for 'Output Devices'.

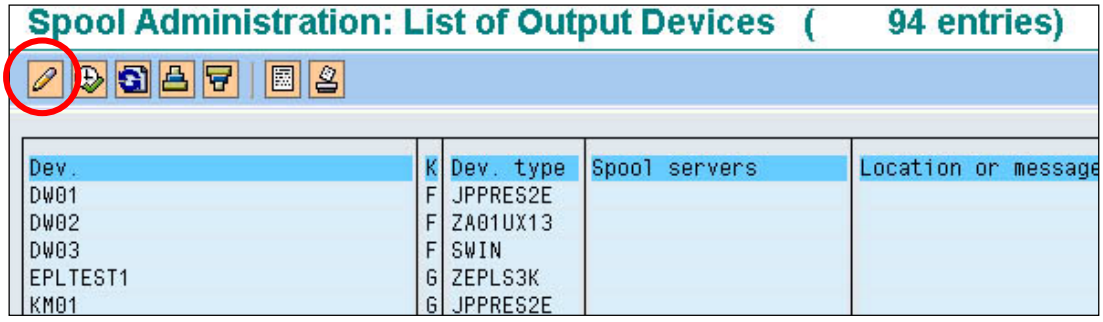

Figure 12 Click on the 'Edit' button to change the Edit mode

Figure 13 Edit Mode buttons

Click on the 'Create' button to create a new Output Device.

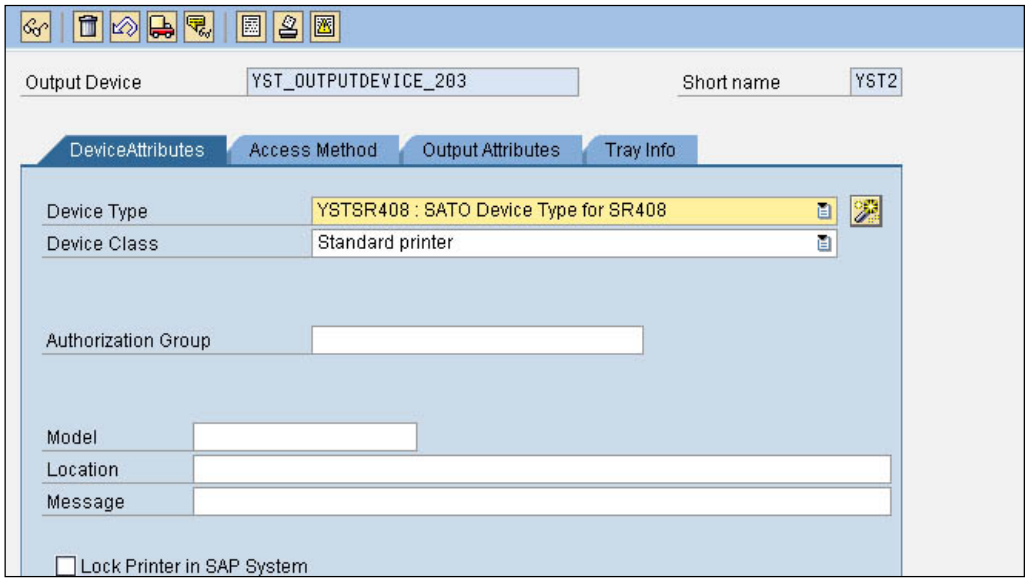

Figure 14 Defining Output Device

Enter a meaningful name in the textbox for Output Device. In the drop-down list of Device Type, select the Device Type you have previously uploaded into the SAP system.

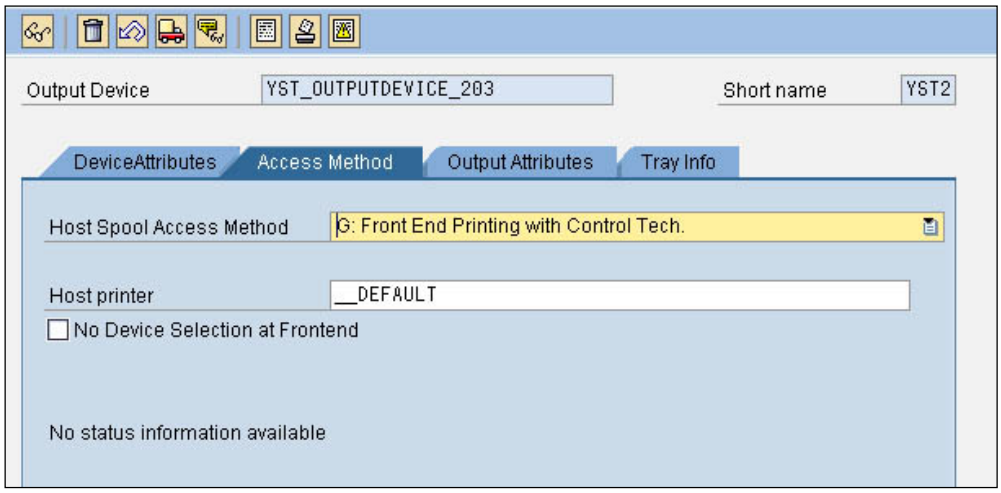

Figure 15 Defining Printing Method

Under the ‘Access Method’, define your Host Spool Access Method. In the above example, method “G: Front End Printing with Control Tech’ will prompt the user to select a list of installed printer drivers under the ‘Printer and Faxes’ in your Windows platform.

Note: Method G is used here just for simplicity during testing.

Save the setting once the necessary information has been entered.

Functionalities of SATO-SAP Printer Driver

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'SAP ABAP-Based Printer Driver for SATO printers' provides the following printing features:

6.1 Barcode

Both SAP traditional and new barcode symbology are supported. (Please refer to SAP notes: 430887 and 645158 for more information about the barcode symbology).

For New Barcode Technology (NBT), the user only needs to define the barcode in the SE73 transaction as System Barcode. The NBT supports the following barcodes:

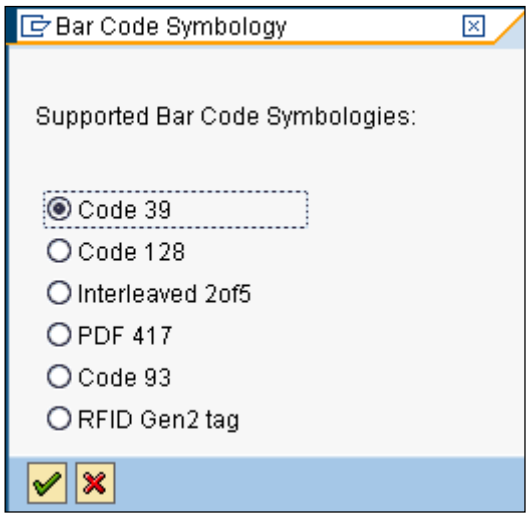


Figure 16 Barcodes in New Barcode Technology

For the Traditional (old) Barcode, the user needs to create the required barcode definition as System Barcode in SE73. Then link the barcode definition to the print control as Printer Barcode. The following shows the provided Print Control in SATO Device Types:

Barcode Type	SAP Print Control	SBPL command
Postnet	SBP07	ESC+BP
UUC/EAN128	XB012	ESC+BI
NW-7 (Codabar, Ratio 1:3)	XB101-XB112	ESC+B0<module width>
Interleaved 2 of 5 (Ratio 1:3)	XB121-XB132	ESC+B2<module width>
JAN/EAN13 (Ratio 1:3)	XB141-XB152	ESC+B3<module width>
JAN/EAN8 (Ratio 1:3)	XB161-XB172	ESC+B4<module width>
UPC-A (Ratio 1:3)	XB181-XB192	ESC+BH<module width>
NW-7 (Codabar, Ratio 1:2)	XB201-XB212	ESC+D0<module width>
Interleaved 2 of 5 (Ratio 1:2)	XB221-XB232	ESC+D2<module width>
JAN/EAN13 (Ratio 1:2)	XB241-XB252	ESC+D3<module width>
JAN/EAN8 (Ratio 1:2)	XB261-XB272	ESC+D4<module width>
UPC-A (Ratio 1:2)	XB281-XB292	ESC+DH<module width>
NW-7 (Codabar, Ratio 2:5)	XB301-XB312	ESC+BD0<module width>

Interleave 2 of 5 (Ratio 2:5)	XB321-XB332	ESC+BD2<module width>
JAN/EAN13 (Ratio 2:5)	XB341-XB352	ESC+BD3<module width>
JAN/EAN8 (Ratio 2:5)	XB361-XB372	ESC+BD4<module width>
UPC-A (Ratio 2:5)	XB381-XB392	ESC+BDH<module width>
Code 39 (Ratio 1:3)	XB501-XB512	ESC+B1<module width>
Code 39 (Ratio 1:2)	XB521-XB532	ESC+D1<module width>
Code 39 (Ratio 2:5)	XB541-XB552	ESC+BD1<module width>
Code 93	XB561-XB572	ESC+BC<module width>

Table 3 Barcode Print Controls

- Note: **The SATO PDL Driver supports Barcode Code 128 Type-A, Type-B, Type-C and Auto-Switch**. Please refer to SAP Note: 645158 for the approach to use this barcode.

6.1.1 Defining Barcode

Before a Barcode can be used in the Smart Forms, the definition of the Barcode must be made.

SE73 – SAPscript Font Maintenance
Enter Transaction code ***SE73*** to enter the following screen.

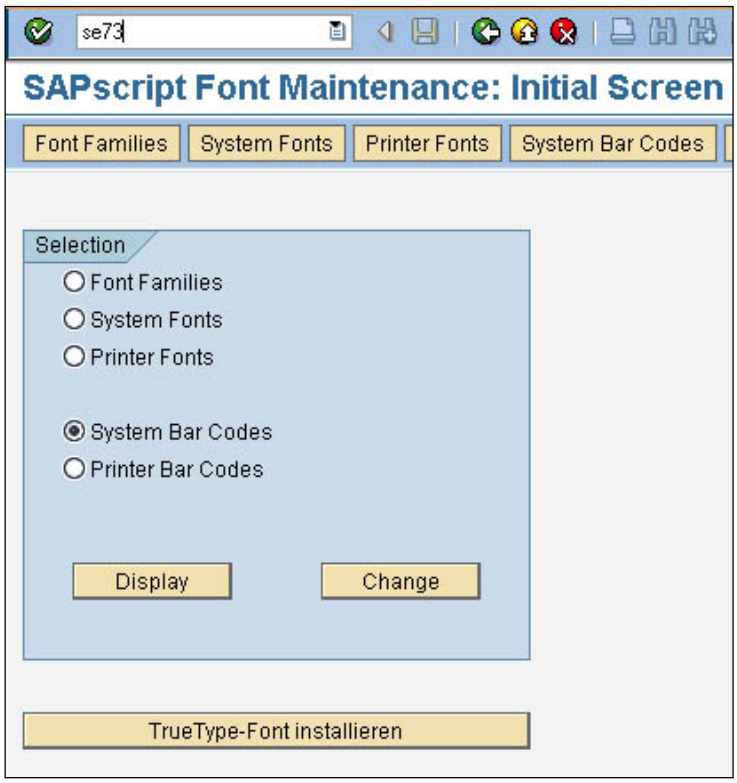
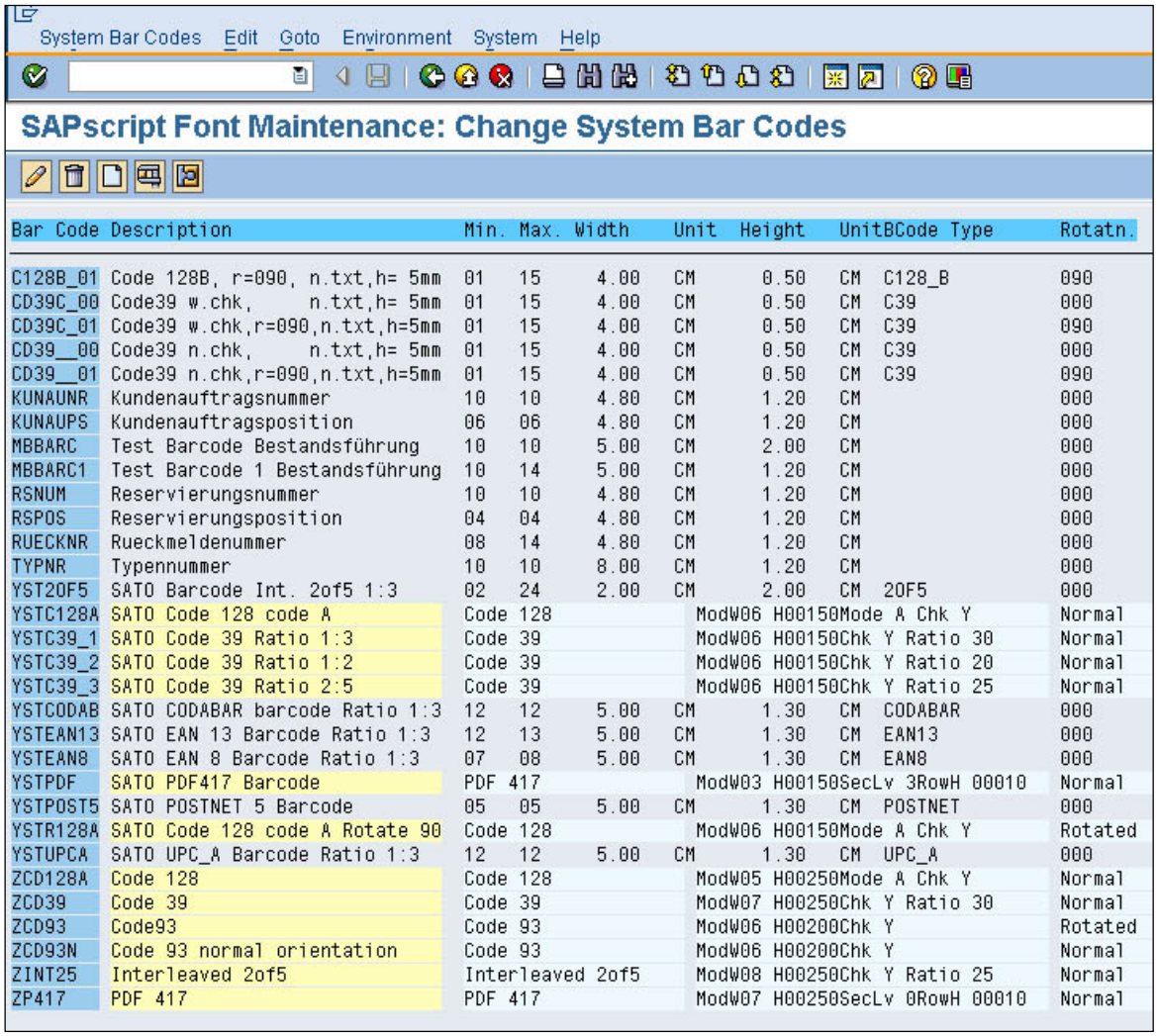


Figure 17 Transaction Code 73 – SAPscript Font Maintenance

Choose the 'System Bar Codes' and then click the 'Change' button to go to the following screen.



Bar Code	Description	Min.	Max.	Width	Unit	Height	UnitBCode Type	Rotatn.
C128B_01	Code 128B, r=090, n.txt,h= 5mm	01	15	4.00	CM	0.50	CM C128_B	090
CD39C_00	Code39 w.chk, n.txt,h= 5mm	01	15	4.00	CM	0.50	CM C39	000
CD39C_01	Code39 w.chk,r=090,n.txt,h=5mm	01	15	4.00	CM	0.50	CM C39	090
CD39__00	Code39 n.chk, n.txt,h= 5mm	01	15	4.00	CM	0.50	CM C39	000
CD39__01	Code39 n.chk,r=090,n.txt,h=5mm	01	15	4.00	CM	0.50	CM C39	090
KUNAUNR	Kundenauftragsnummer	10	10	4.80	CM	1.20	CM	000
KUNAUPS	Kundenauftragsposition	06	06	4.80	CM	1.20	CM	000
MBBARC	Test Barcode Bestandsführung	10	10	5.00	CM	2.00	CM	000
MBBARC1	Test Barcode 1 Bestandsführung	10	14	5.00	CM	1.20	CM	000
RSNUM	Reservierungsnummer	10	10	4.80	CM	1.20	CM	000
RSPOS	Reservierungsposition	04	04	4.80	CM	1.20	CM	000
RUECKNR	Rueckmeldenummer	08	14	4.80	CM	1.20	CM	000
TYPNR	Typennummer	10	10	8.00	CM	1.20	CM	000
YST2OF5	SATO Barcode Int. 2of5 1:3	02	24	2.00	CM	2.00	CM 2OF5	000
YSTC128A	SATO Code 128 code A	Code 128				ModW06 H00150Mode A Chk Y		Normal
YSTC39_1	SATO Code 39 Ratio 1:3	Code 39				ModW06 H00150Chk Y Ratio 30		Normal
YSTC39_2	SATO Code 39 Ratio 1:2	Code 39				ModW06 H00150Chk Y Ratio 20		Normal
YSTC39_3	SATO Code 39 Ratio 2:5	Code 39				ModW06 H00150Chk Y Ratio 25		Normal
YSTCODAB	SATO CODABAR barcode Ratio 1:3	12	12	5.00	CM	1.30	CM CODABAR	000
YSTEAN13	SATO EAN 13 Barcode Ratio 1:3	12	13	5.00	CM	1.30	CM EAN13	000
YSTEAN8	SATO EAN 8 Barcode Ratio 1:3	07	08	5.00	CM	1.30	CM EAN8	000
YSTPDF	SATO PDF417 Barcode	PDF 417				ModW03 H00150SecLv 3RowH 00010		Normal
YSTPOST5	SATO POSTNET 5 Barcode	05	05	5.00	CM	1.30	CM POSTNET	000
YSTR128A	SATO Code 128 code A Rotate 90	Code 128				ModW06 H00150Mode A Chk Y		Rotated
YSTUPCA	SATO UPC_A Barcode Ratio 1:3	12	12	5.00	CM	1.30	CM UPC_A	000
ZCD128A	Code 128	Code 128				ModW05 H00250Mode A Chk Y		Normal
ZCD39	Code 39	Code 39				ModW07 H00250Chk Y Ratio 30		Normal
ZCD93	Code93	Code 93				ModW06 H00200Chk Y		Rotated
ZCD93N	Code 93 normal orientation	Code 93				ModW06 H00200Chk Y		Normal
ZINT25	Interleaved 2of5	Interleaved 2of5				ModW08 H00250Chk Y Ratio 25		Normal
ZP417	PDF 417	PDF 417				ModW07 H00250SecLv 0RowH 00010		Normal

Figure 18 System Barcode screen

Click the ‘Create’ button or press the ‘F5’ key to create a new System Barcode definition.

Figure 19 Create Button

6.1.2 New Barcode Technology

The following describes how to create a barcode with new Barcode Technology.

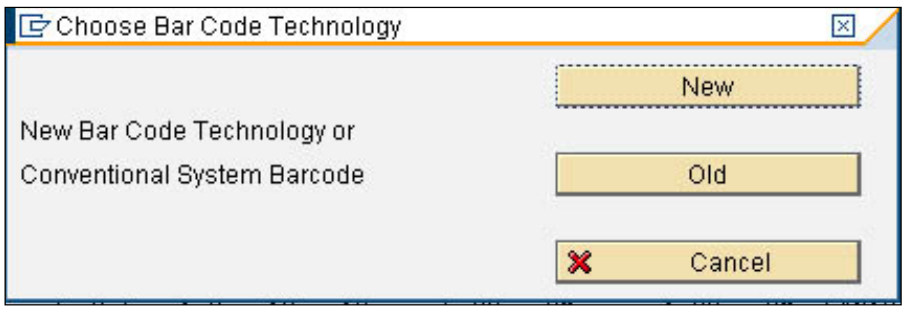


Figure 20 Choosing Barcode Technology

The ‘New Barcode Technology’ supports the following barcodes:

- Code39
- PDF417
- Code93
- 2 of 5 Interleaved
- Code128

Click on the ‘New’ button to enter the following screen.

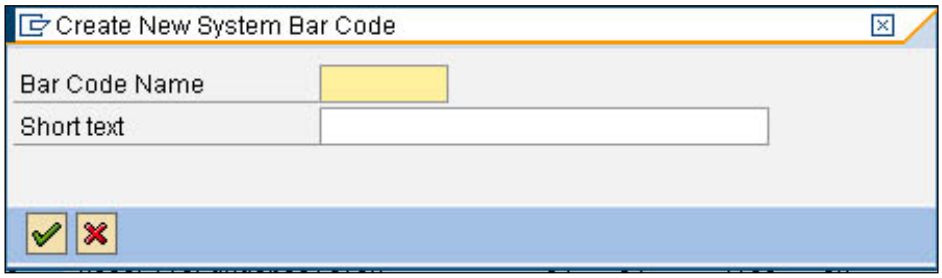


Figure 21 Entering Barcode information

For SATO barcode, it is recommended to define a Barcode name with the prefix ‘YST’. For example, to define a new Code39 barcode, the following Barcode name can be used:

YSTCd39

Enter some description on the textbox for ‘Short text’. Click the tick button to continue.

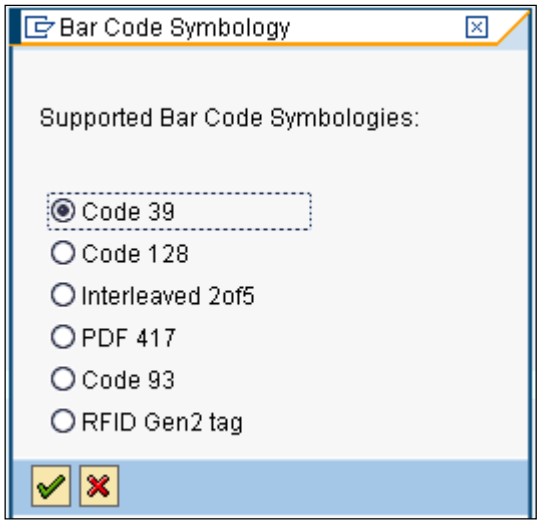


Figure 22 Selecting the Barcode Type

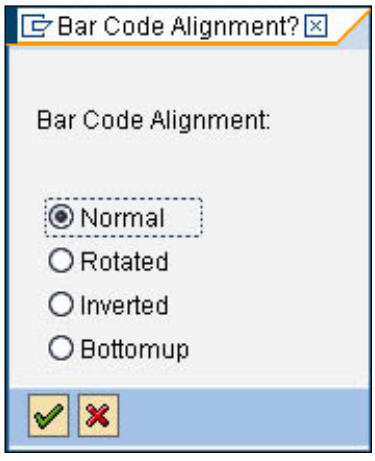


Figure 23 Choosing the Barcode alignment

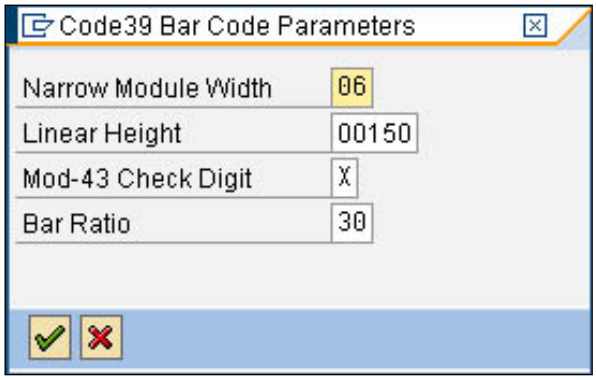


Figure 24 Entering Barcode Information

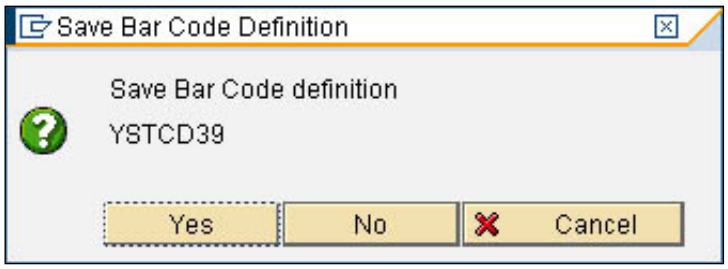


Figure 25 Saving the Barcode definition

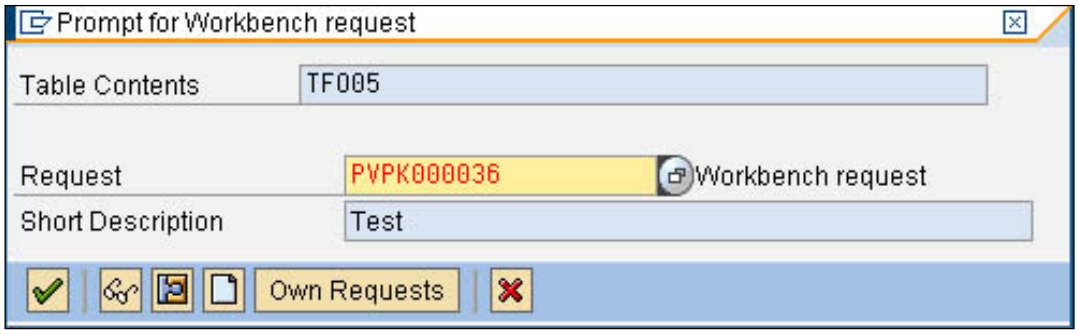


Figure 26 Saving the definition to the workspace

That is all for the System Barcode definition. The next step will be defining the Printer Barcode to link the System Barcode to the Printer Control in the device type.

6.1.3 New Technology Barcode

For more information about the SATO Barcode printing command, please refer to the printer command specifications.

Code 39

This barcode is to start and end with '*' characters. If the given data is not started and ended with the '*' character, then the SATO-SAP printer driver will add the characters to the data automatically.

The printer will generate a 'beep' sound if invalid data is given.

Code 93

The maximum number of data for this barcode is 99. The printer, not the printer driver, will generate a check digit when the data is printed on the printer.

Code 128

For example, if the data '123456' was given, the following SBPL command will be generated by the printer driver: … ***BG03158>H123456.***

Please refer to SAP Note: 645158 for the input approach for the Barcode Code 128. If unexpected values were received by the SATO PDL Driver, the barcode might not be printed.

Interleaved 2 of 5

The given data of this barcode must be an even number. If odd number data is given, the SATO-SAP printer driver will generate a '0' in front of the given data.
For example,
If '12345' was given, the barcode with the value '012345' will be printed.

PDF 417

Minimum module width can be set to 01 and 02; however, this may not be read properly.
Note: For rotated PDF417 Barcode, the printed location on the label might differ from what is shown on the print preview. The user might want to adjust the position in the Smart Forms to get the required positioning.

RFID Gen2 Tag

The user has to enter the necessary data based on the following descriptions:

RFID Attribute:	Representation in barcode field data:
EPC value	EPC:xxxxxxxxxxxxxxxxxxxxxxxx; (xxxxxxxxxxxxxxxxxxxxxxxx is 24 digit hex value representing 12 bytes)
PC value	PC:xxxxxxxxxxxxxxxxxxxxxxxx; (xxxxxxxxxxxxxxxxxxxxxxxx is 24 digit hex value representing 12 bytes) **(SATO Device Driver does not support this feature)**
USR value	USR:xxxxxxxxxxxxxxxxxxxxxxxx; (xxxxxxxxxxxxxxxxxxxxxxxx is 24 digit hex value representing 12 bytes)
ACS passcode	ACS:yyyyyyyy; (yyyyyyyy is 8 digit hex value representing 4 bytes)
LOCKMASK	LM:yy; yy is 2 digit hex value representing 1 byte: 0x01 – Lock EPC+PC 0x02 – Perma-lock EPC+PC 0x04 – Lock USR 0x08 – Perma-lock USR **(only Lock EPC and Lock USR are supported by SATO Device Driver)**
KILL passcode	KILL:yyyyyyyy; (yyyyyyyy is 8 digit hex value representing 4 bytes)

Table 4 RFID Attributes

Examples:

Barcode data field contents:	Meaning:
EPC:F2A07895C1710708090A0B0C;	Numerical (hexadecimal) data for EPC
USR:F2A07895C171010203040506;EPC:019975F3ABB0010203040506;	Numerical data for USR and EPC banks
EPC:11223344556601020304050 6;ACS:1224489F;LM:01;	Numerical data for EPC bank, ACS passcode for LOCK operation is 1224489F, Memory banks EPC+PC are locked
EPC:112233445566070809 0A0B0C;USR:0112248D8F060708090A0B0C;ACS:1234567A;LM:0A;	Numerical data for EPC and USR banks, ACS passcode for PERMALOCK operation is 1234567A, Memory banks EPC+PC and USR are perma-locked
EPC:123456789ABC0708090A0B0C;KILL:1234567F;	Numerical data for EPC, KILL passcode is 1234567F

Table 5 RFID input examples

6.1.4 Old Barcode Technology (Conventional System Barcode)

Click the 'Old' button (as in Figure 20 Choosing Barcode Technology to define a Barcode with Old Barcode Technology.

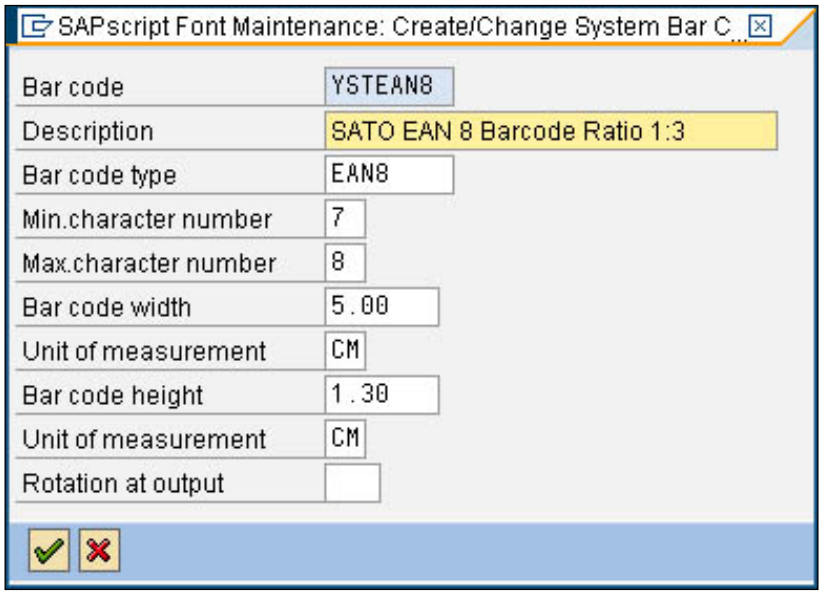


Figure 27 Defining Barcode with Old Barcode Technology

* In Old Barcode Technology, there is no way to define the Barcode Module Width. Thus, print controls with such information have been defined. The user has to select the print control which carries the required Barcode Module Width.

6.1.5 Old Technology Barcode

Interleaved 2 of 5

The given data of this barcode must be an even number. If odd number data is given, the SATO-SAP printer driver will generate a '0' in front of the given data.
For example,
If '12345' was given, the barcode with the value '012345' will be printed.

CODABAR

The barcode includes start and stop characters: A,B,C,D,E,N,T,a,b,c,d,e,n,t. If the given data is not started and ended with the start/stop characters, then the SATO-SAP printer driver will embed the data with Start/Stop character 'A'.

POSTNET

The SATO-SAP printer driver supports the US Postal Service POSTNET barcode with the following formats:
- 5 digits (Postnet-32 format)
- 6 digits (Postnet-37 format)
- 9 digits (Postnet-52 format)
- 11 digits (Postnet-62 Delivery Point format)

If data with other formats than above was given, the SATO printer will generate a 'beep' sound to indicate invalid data.

UPC Barcode Type A

The data of this barcode should be 11 digits + 1 check digit. If the user supplies 12 digits data, then the SATO-SAP printer driver will assume the last digit is the given check digit. Else, the driver will generate the check digit.

EAN 8 Barcode

The data of this barcode should be 7 digits + 1 check digit. If the user supplies 8 digits data, then the SATO-SAP printer driver will assume the last digit is the given check digit. Else, the driver will generate the check digit based on Modulo 10 formula.

EAN 13 Barcode

The data of this barcode should be 12 digits + 1 check digit. If the user supplies 13 digits data, then the SATO-SAP printer driver will assume the last digit is the given check digit. Else, the driver will generate the check digit based on Modulo 10 formula.

Code 39

Code39 is an alphanumeric code that can represent the following characters in the bar code data:
Numbers: 1234567890
Capital letters: ABCDEFGHIJKLMNOPQRSTUVWXYZ
Special characters: - . $ / + %
Blank characters (space characters)

The start and stop character for the Code39 bar code is represented by an asterisk (*) in the text view of the bar code data (also called "human-readable text" or "interpretation line").
If the given data is enclosed in asterisk (*), no check digit will be generated by the driver.

Code 93

Code93 is an alphanumeric code that can represent the following characters directly in the bar code data:
Numbers: 1234567890
Capital letters: ABCDEFGHIJKLMNOPQRSTUVWXYZ
Special characters: - . $ / + %
Blank characters (space characters)

6.1.6 Defining Printer Barcodes

Once the System Barcode (Old Technology) has been defined, then proceed to define the printer barcode. **Note: This step is not required for barcode defined with New Barcode Technology.**

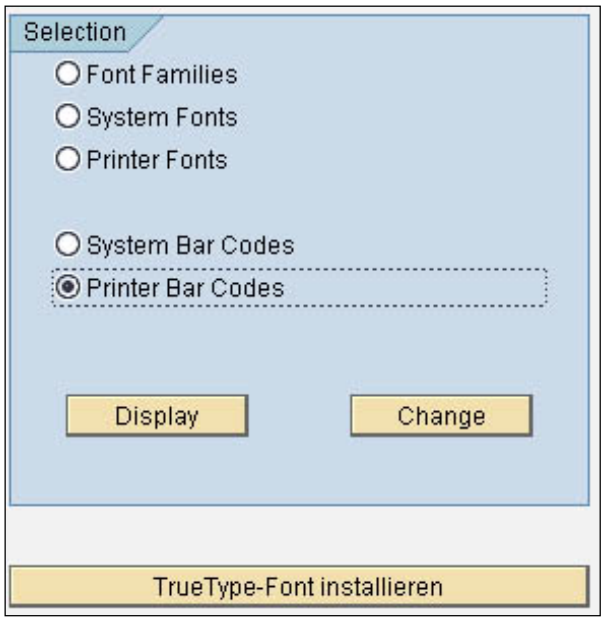


Figure 28 Printer Barcode Definition

Choose the ‘Printer Barcodes’ and then click the ‘Change’ button to create a Printer Barcode definition.

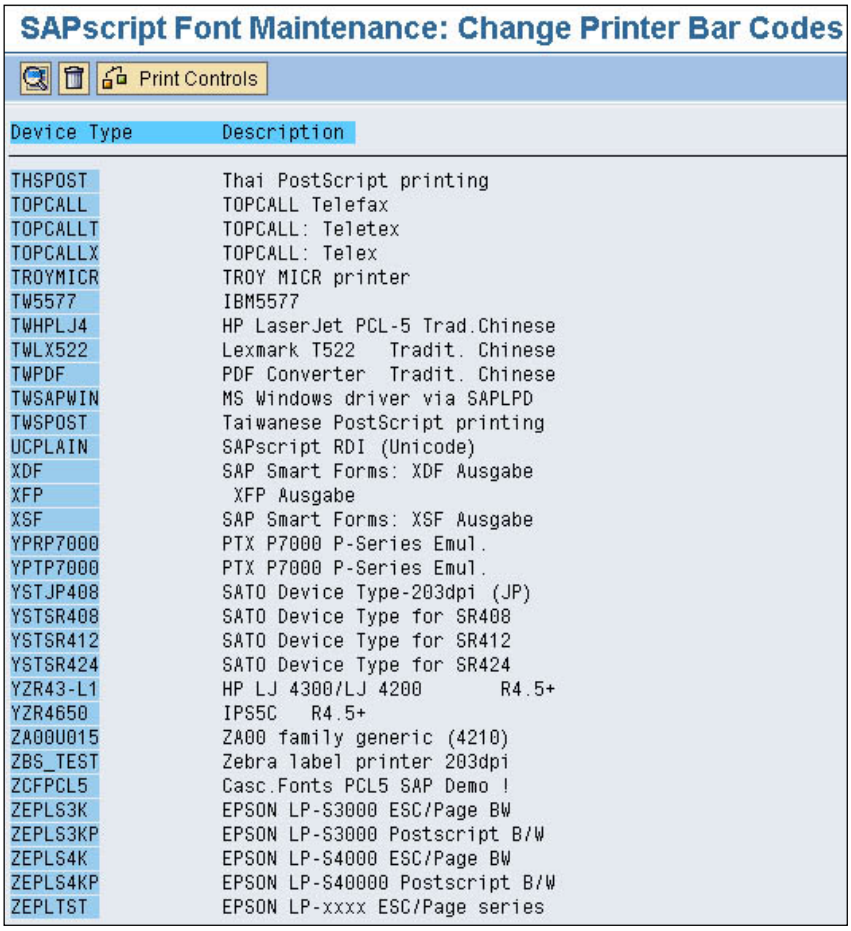


Figure 29 Device List for Printer Barcodes

Double click the SATO device type which starts with the prefix ‘YST’.

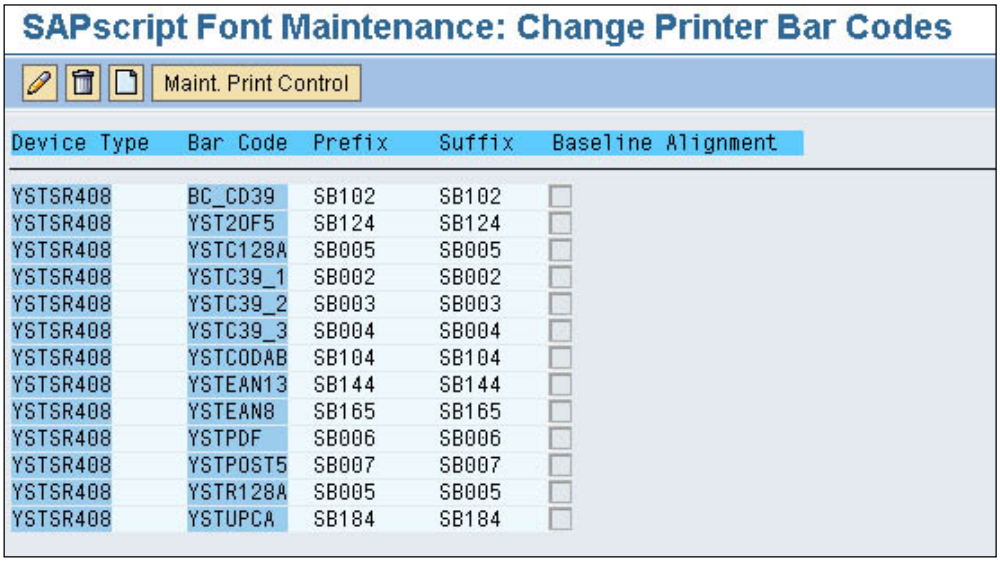


Figure 30 Printer Barcode List in the device type

Click on the ‘Create’ button or ‘F5’ key to create a new definition of Printer Barcode.

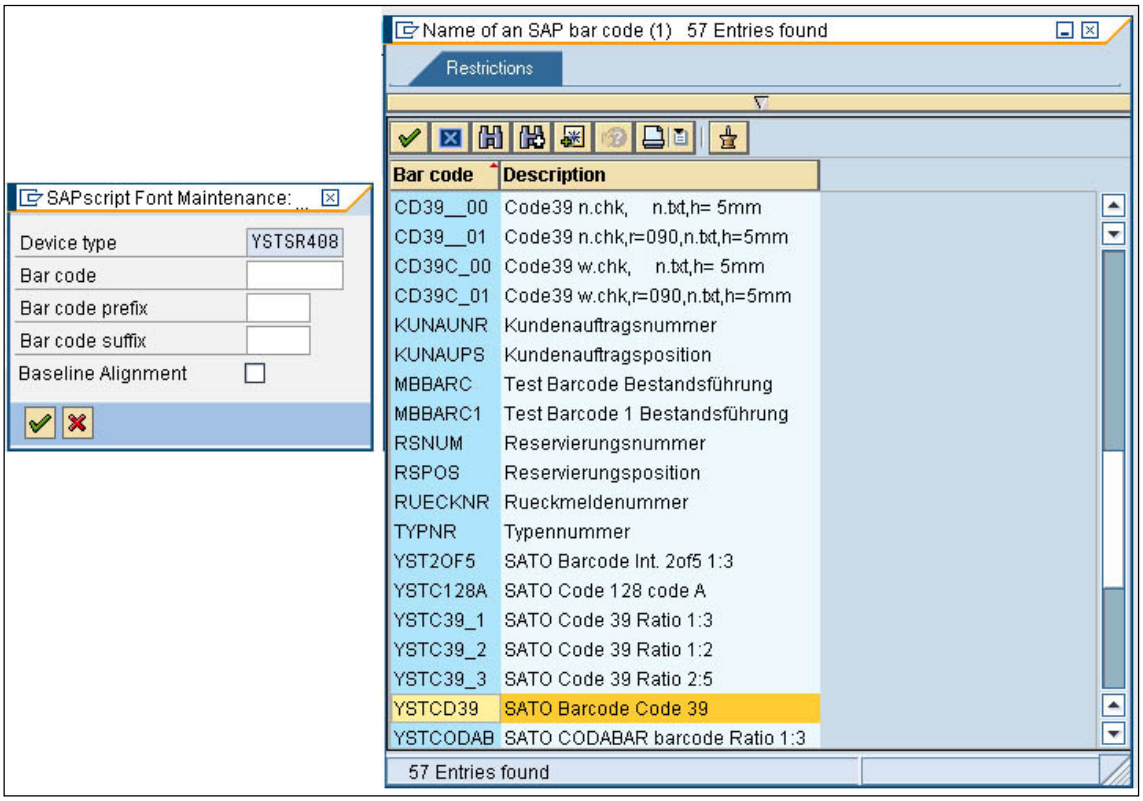


Figure 31 Defining Printer Barcode

Select the System Barcode which has been defined previously from the entry list. Then key in the required Print Control. Note: Key in the same print control for both ‘Bar code prefix’ and ‘Bar code suffix’.

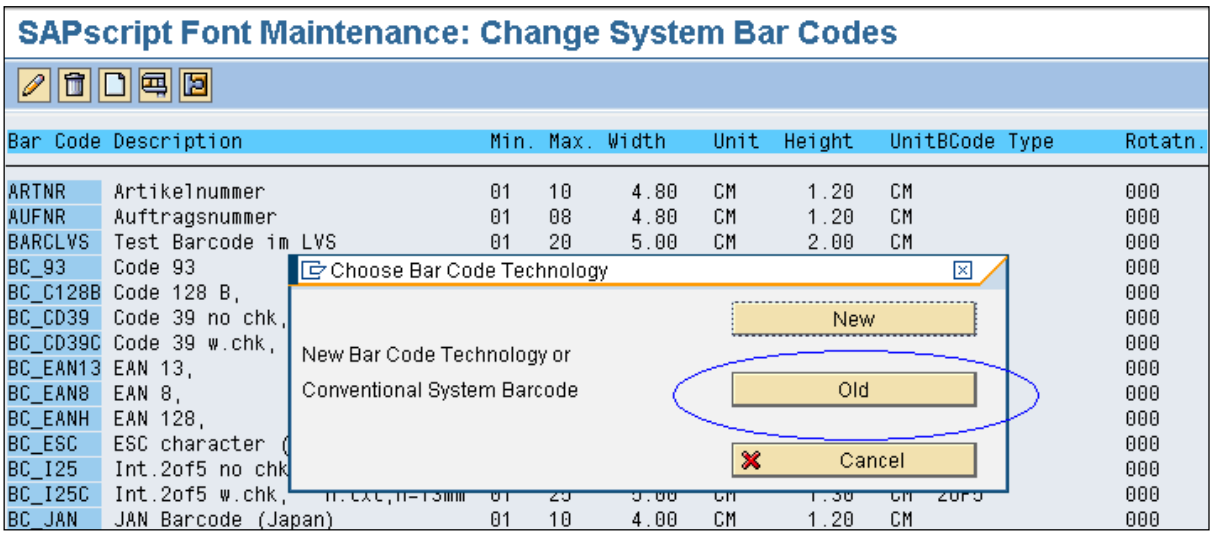
Refer to Table 3 Barcode Print Controls for the available print control definition in the device type.

6.1.7 Customized Barcode With UNDEF

Note that this task should only be performed by advanced users. Please contact SATO technical team at https://sato-globalhelp.zendesk.com/hc/en-001/requests/new should you have any queries.

If the printer-resident (such as GS1-128) is not supported in the SAP system, customized print control can be added to the device type and the "UNDEF" barcode type can be used to map to the print control.

UNDEF is only in Old Barcode Technology. To start with UNDEF, go to SE73->System Bar codes to define a Barcode using the Conventional System Barcode (choose 'Old')



6.1.7.1 GS1-128 Barcode With UNDEF

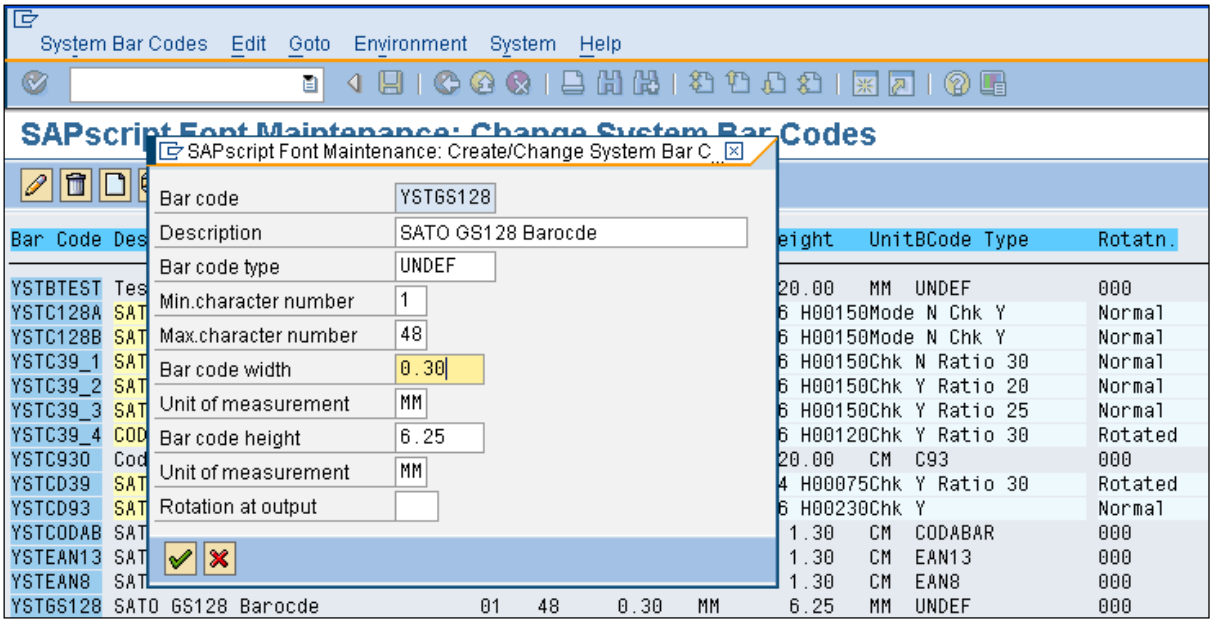


Figure 32 Customized Barcode Definition

i. Create Customized Barcode Definition
Go to SE73->System Bar Codes to create a GS1-128 Barcode definition (Figure 32 Customized Barcode Definition). Use "UNDEF" as the Bar code type. Note that the "Bar code width" of the above definition will not be used.

ii. Create Print Control in device type

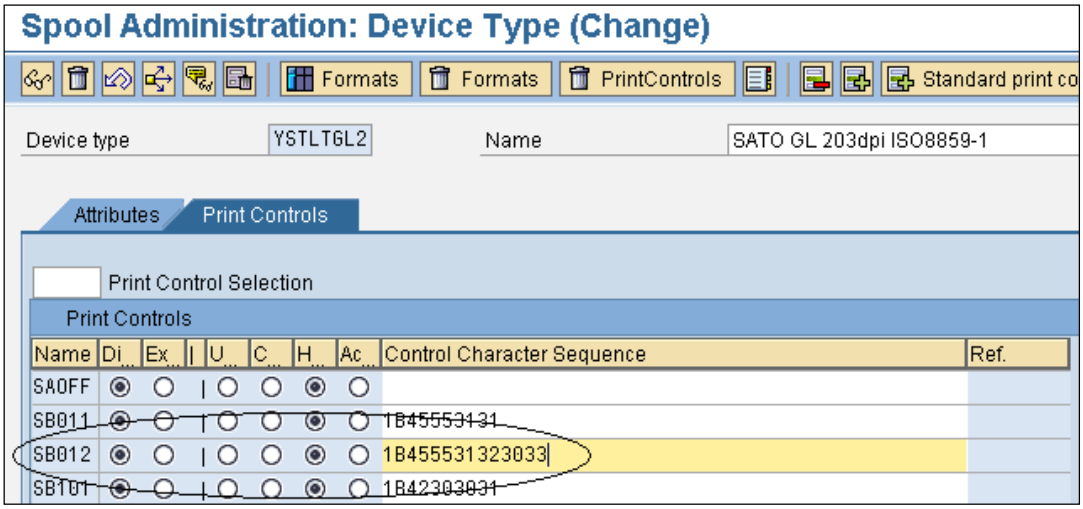


Figure 33 Defining Print Control in Device type

Use SPAD->Full Administration->Device Types to open the Print Controls tab of the device type. Add a new barcode print control (Prefix SB) and input the hex value of the Control Character Sequence. In this example, the hex value of “<Esc>EU1203” is entered for Print Control SB012.

This print control defines SATO Barcode commands for GS1-128 (UCC/EAN128) with CC-C with Narrow Barcode with = 3 dots. The Barcode Height will be extracted from the Barcode Definition (Figure 32 Customized Barcode Definition). The Barcode Data will be supplied from Smart Forms or SAP Database.

iii. Mapping of Barcode Definition to Print Control

Go to SE73->Printer Bar Codes

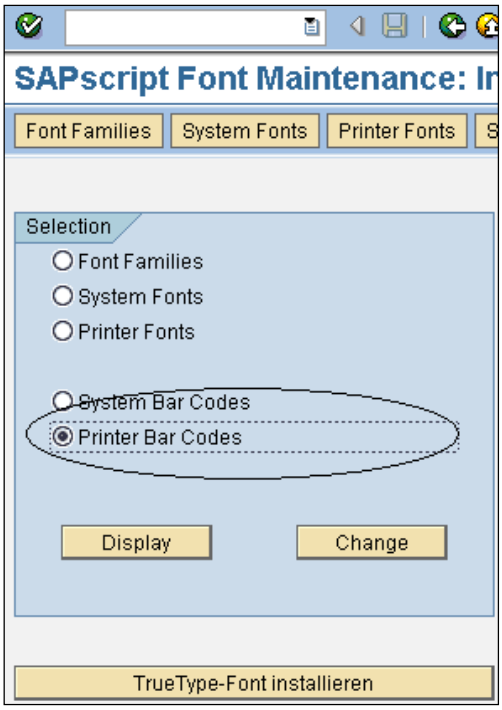


Figure 34 Mapping of Print Control

Click on the Device Type to add the barcode mapping to Print Control.

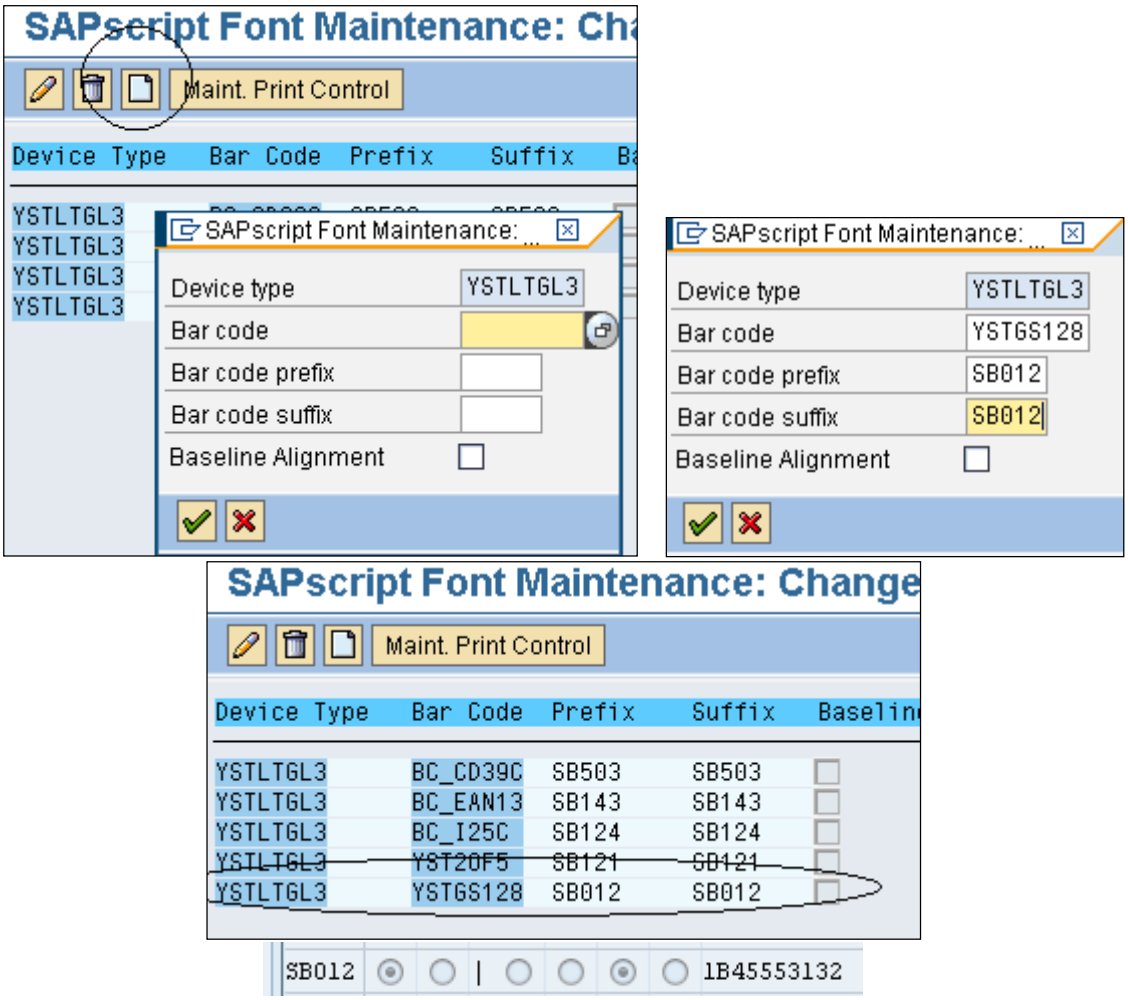


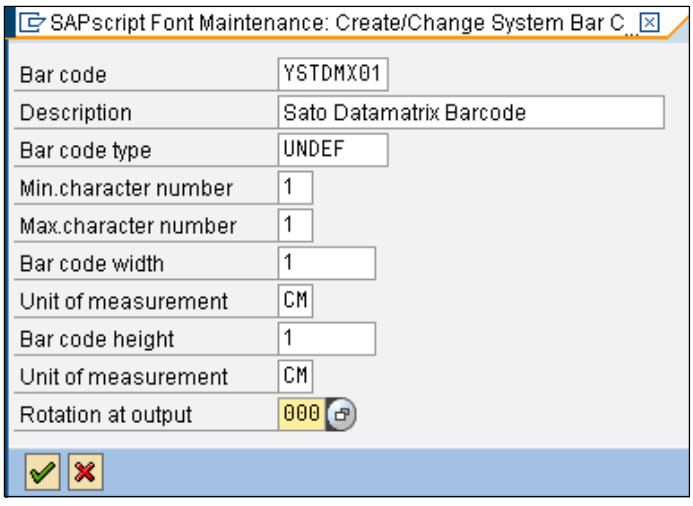
Figure 35 Mapping of Print Control

6.1.7.2 GS1 Datamatrix Barcode With UNDEF

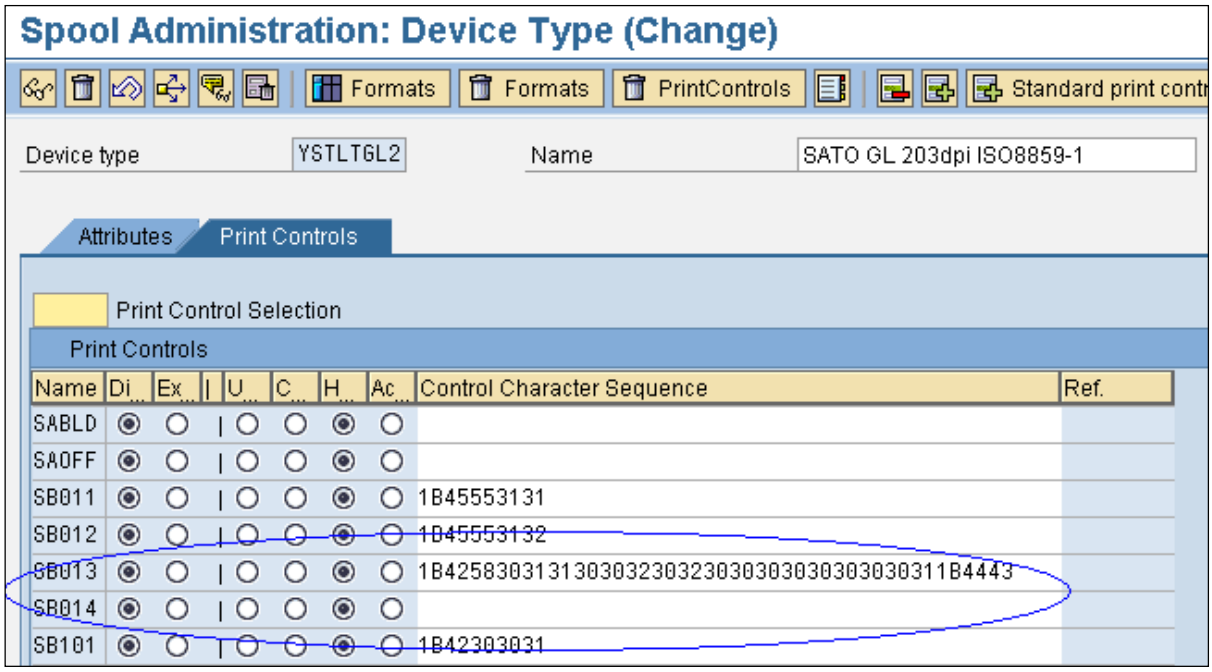
6.1.7.2.1 Create a New Barcode Definition

Note:

1. The name of the Barcode must start with "**YSTDMX**". This is how the SATO Device Driver identifies this as the Barcode Definition for Datamatrix.
2. The Barcode Type must be **UNDEF**.
3. The rest of the parameters (except Rotation) will not be used by SATO Device Driver for the Datamatrix barcode. Those parameters have to be defined inside the Print Control as below.



6.1.7.2.2 **Define the Print Control Information in the Device Type**



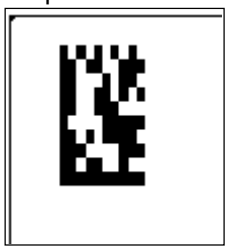
SB013 defines the prefix which carries the following SATO Print Commands:
Font ID: 01
Error correction level: 20 (ECC200)
Cell width: 02
Cell pitch: 02
No. of cells per line: 000
No. of cell lines: 000
Mirror image: Normal (Standard print)
＜ESC＞ B X 0 1 **2 0** 0 2 0 2 0 0 0 0 0 0 0 0 1
＜ESC＞ D C

The height and the width of the barcode are controlled by the cell width and pitch:

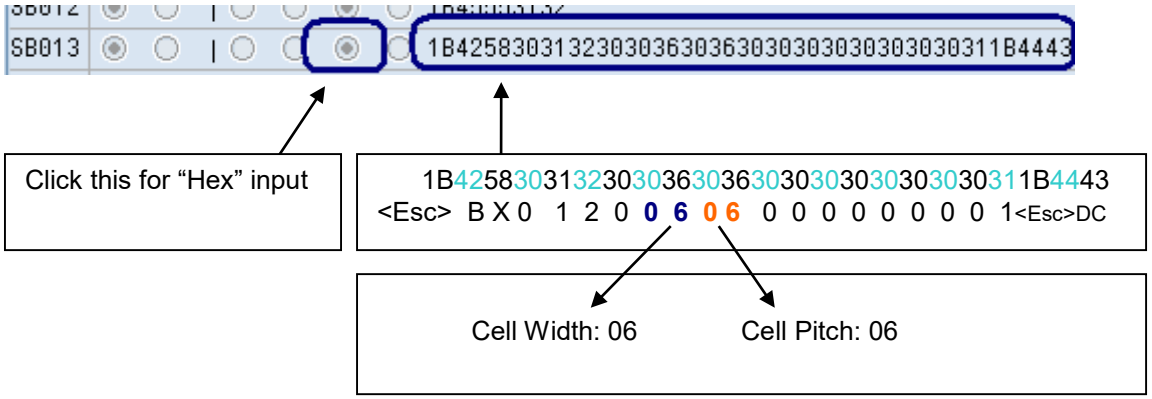
Example 1)
Cell width: 05, Cell pitch 05
<Esc> B X 0 1 **2 0** 0 5 0 5 0 0 0 0 0 0 0 0 1
Output:

Example 2)
Cell width: 09, Cell pitch 09
<Esc> B X 0 1 **2 0** 0 9 0 9 0 0 0 0 0 0 0 0 1
Output:

Example 3)
Cell width: 09, Cell pitch 15
<Esc> B X 0 1 **2 0** 0 915 0 0 0 0 0 0 0 0 1
Output:

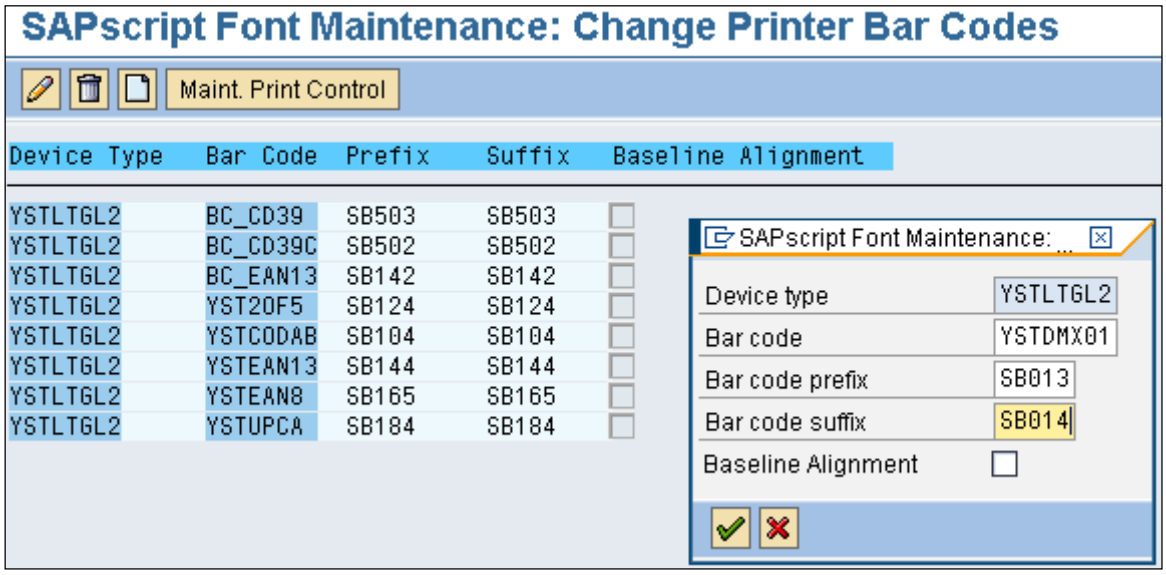


The data of the Barcode will be appended to the Prefix print control (in this case, SB013).
If there is any special code (such as the FNC1 code), you can append it here (as a hex value).
SB014 defines the suffix. If there is no data for the Suffix, you can leave the print control empty.



6.1.7.2.3 **Mapping the Barcode Definition to Print Control**

Go to SE73->Printer Bar codes. Create the mapping in the device type.



Select the Barcode Definition created previously and map it to the print controls.

6.1.7.2.4 **FNC Special Characters in GS1 Datamatrix Command**

The logic applied in order to produce the command containing the FNC special character(s) is the same as this paragraph states doing that originally for the command not having the special character within but:

- The name of the Barcode must start with "**YSTQDM**".
- The Smart Form's tag generating the final FNC special character must be the "***FNC***"

- The example Hex string generating the <ESC>2D51,10,10,000,000<ESC>DN command might look like: "1B324435312C31302C31302C3030302C3030301B444E".

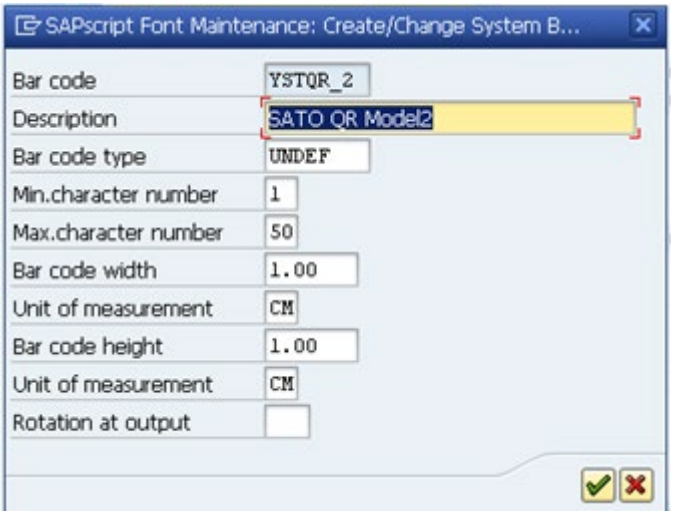
Command Format
<2D51>,aa,bb,ccc,ddd
Parameters:
a [Horizontal cell size] = Valid Range : 01 to 99 dots
b [Vertical cell size] = Valid Range : 01 to 99 dots
c [Number of cell in one line] = Valid Range : 010 to 144000 : (Auto-setting)
d [Number of cell lines] = Valid Range : 008 to 144 000 : (Auto-setting)
Data part
<DN>mmmm,n～n
Parameters:
m [Number of data] = Valid Range : 1 to 3116
n [Print data] = Data

6.1.7.3 QR Code With UNDEF

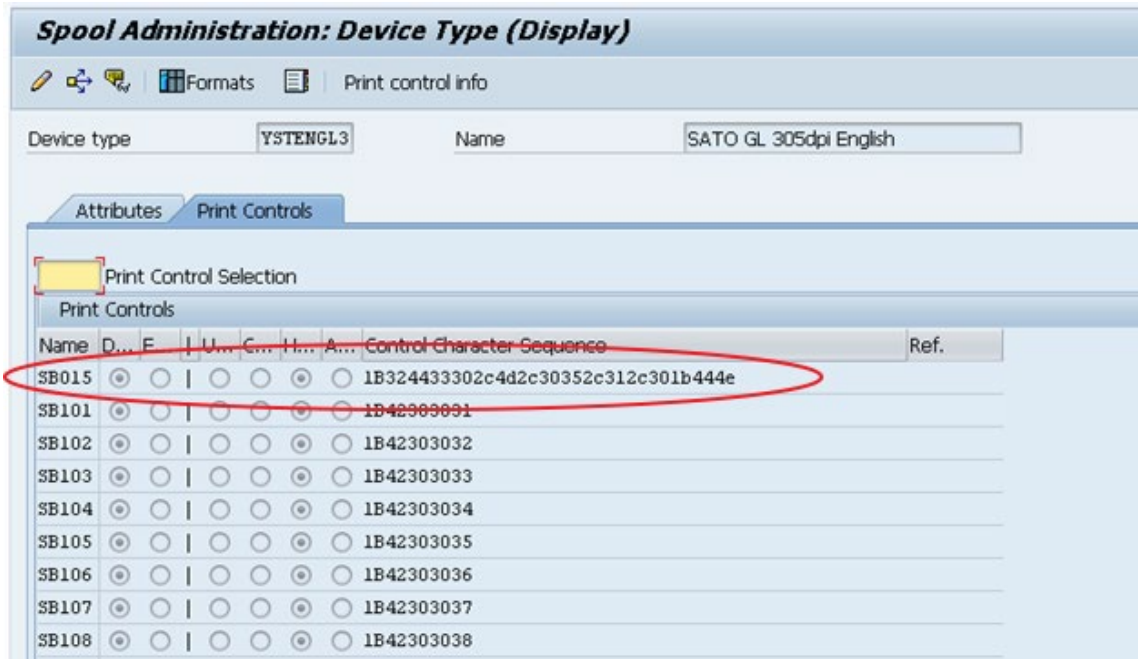
6.1.7.3.1 **Create a New Barcode Definition.**

Note:

1. The name of the Barcode must start with "**YSTQR_**". This is how the SATO Device Driver identifies this as the Barcode Definition for QR Code.
2. The Barcode Type must be **UNDEF**.
3. The rest of the parameters (except Rotation) will not be used by SATO Device Driver for the QR Code. Those parameters have to be defined inside the Print Control as below.



6.1.7.3.2 **Define the Print Control Information in the DeviceType**



SB015 defines the prefix which carries the following SATO Print Commands:

Entered commad in

Hex: 1B324433302c4d2c30352c312c301b444e

ASCII: 2D30,M,05,1,0DN

Command Format: <2D30>,a,bb,c,d

SBPL Command: <ESC>2D30

Parameters:

- **a** Error Correction = L: 7%, M: 15%, Q: 25%, H: 30%
- **b** Cell Size= 01 to 32 dots
- **c** Data Setting Mode = 0: Manual, 1: Auto
- **d** Concentration Mode = 0: Normal, 1 Concentration Mode (using 1 required more parameters)

For Data Part

Command Format : <DN>mmmm,n~n

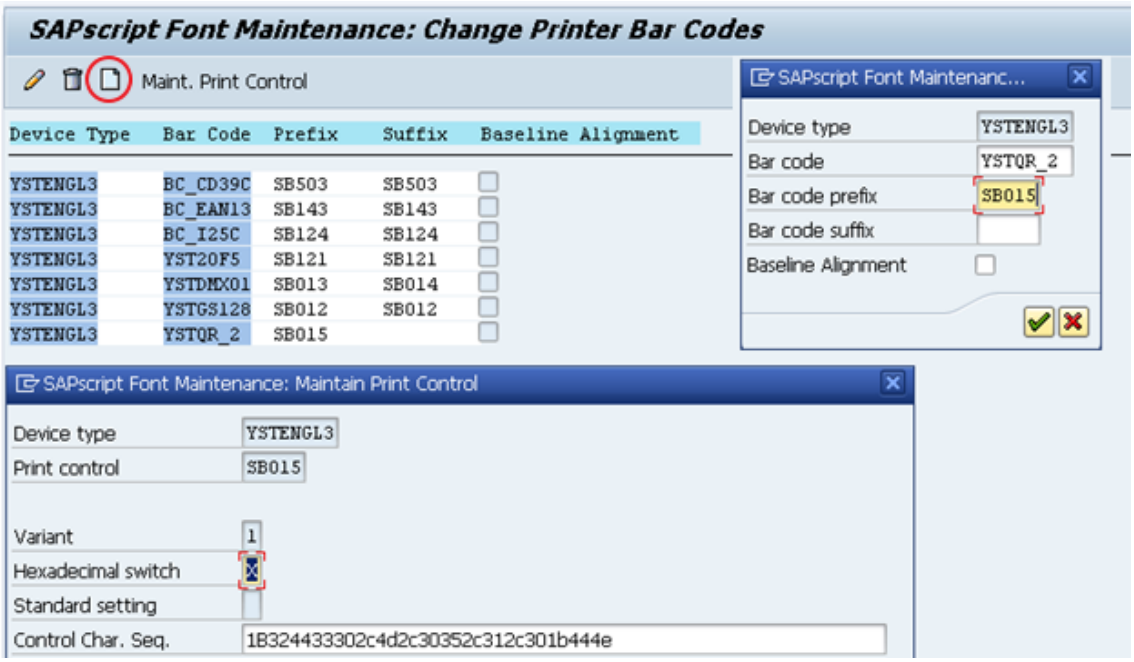
SBPL Command : <ESC>DN

Parameters:

- **m** No of data = 1 to 2953
- **n** data = Print Data

6.1.7.3.3 **Mapping the Barcode Definition to Print Control**

Go to SE73->Printer Bar codes. Create the mapping in the device type.



Select the Barcode Definition created previously and map it to the print controls.

6.1.7.4 RFID "ESC+IP0e:h,epc:" Command

The old barcode technology barcode "IP0_1" must be created - the barcode's name must start with the "IP0_" value and it must be "UNDEF" type as similar actions are already described in this document.
The following hexadecimal "1B411B495030653A682C6570633A" string representing "ESC+AESC+IP0e:h,epc:" value is located in the print control of the chosen device type.
If you wish to achieve "ESC+IP0e:h,epc:" only, you must remove the first two hex values of the print control's hex string.

The 44 length string placed in a Smart Form:
"31004A00440041003100370031003400350037003600;"

Generated the RFID command section sent to the printer:
"ESC+AESC+IP0e:h,epc:31004A00440041003100370031003400350037003600;"

6.2 Fonts

SATO-SAP Printer Driver supports the following fonts:

Latin 1 (ISO8859-1 codepage) device types:

SAP Font	SATO Font	Type	SBPL Command
HELVETICA	CG Triumvirate	Scalable	ESC+RDB
TIMES	CG Times	Scalable	ESC+RDA

English only device types:

SAP Font	SATO Font	Type	SBPL Command
HELVETICA	CG Triumvirate	Scalable	ESC+RDB
TIMES	CG Times	Scalable	ESC+RDA
COURIER BOLD (optional Italic)	Helvetica Outline Font, fixed character pitch	Scalable	ESC+$B, ESC+$=
LETGOTH	SATO Fixed Size M Font	Bitmap, fixed size	ESC+M
LNPRINT	SATO Fixed Size S Font	Bitmap, fixed size	ESC+S

Codepage 850 device types :

SAP Font	SATO Font	Type	SBPL Command
HELVETICA	CG Triumvirate	Scalable	ESC+RDB
TIMES	CG Times	Scalable	ESC+RDA
COURIER BOLD (optional Italic)	Helvetica Outline Font, fixed character pitch	Scalable	ESC+$B, ESC+$=

Korean (Wangsung Encoding/Unicode) device types:

SAP Font	SATO Font	Type	SBPL Command
KPBATANG Proportional	HYRGothic-Medium	Scalable	ESC+RDK

Simplified Chinese (GB2312/Unicode) device types:

SAP Font	SATO Font	Type	SBPL Command
CNSONG Proportional	MKaiSO-Medium-U	Scalable	ESC+RDC

Traditional Chinese (Big 5/Unicode) device types:

SAP Font	SATO Font	Type	SBPL Command
TWSONG Proportional	MHeiS-Bold -U	Scalable	ESC+RDc

Japanese (Shift-JIS) + English ASCII device types:

SAP Font	SATO Font	Type	SBPL Command
DBGothic, DBMincho, JPMincho	SATO Japanese resident bitmap font	Bitmap, fixed size	ESC+K
HELVETICA ^	CG Triumvirate	Scalable	ESC+RDB
TIMES ^	CG Times	Scalable	ESC+RDA
COURIER BOLD * (optional Italic)	Helvetica Outline Font, fixed character pitch	Scalable	ESC+$B, ESC+$=

Note: * YSTJAPTx not supported, ^ YSTJALPx not supported

Table 6 Supported font in SATO-SAP Printer Driver

For Fixed size SATO Resident Font, please refer to the Font Appendix for a list of the supported size of the font.

Note:

1. SATO 203dpi printer does not support printing of 8 points or lower Courier Font (ESC+$A, ESC+$B, ESC+$=). It will be printed in a slightly larger size instead.

2. There could be some discrepancies between the string length shown on Smart Forms and what printed from the printer. This is because when converting the SAP font point size into SATO font dot size for a specific resolution, there is a rounding up of fractions in the calculation.

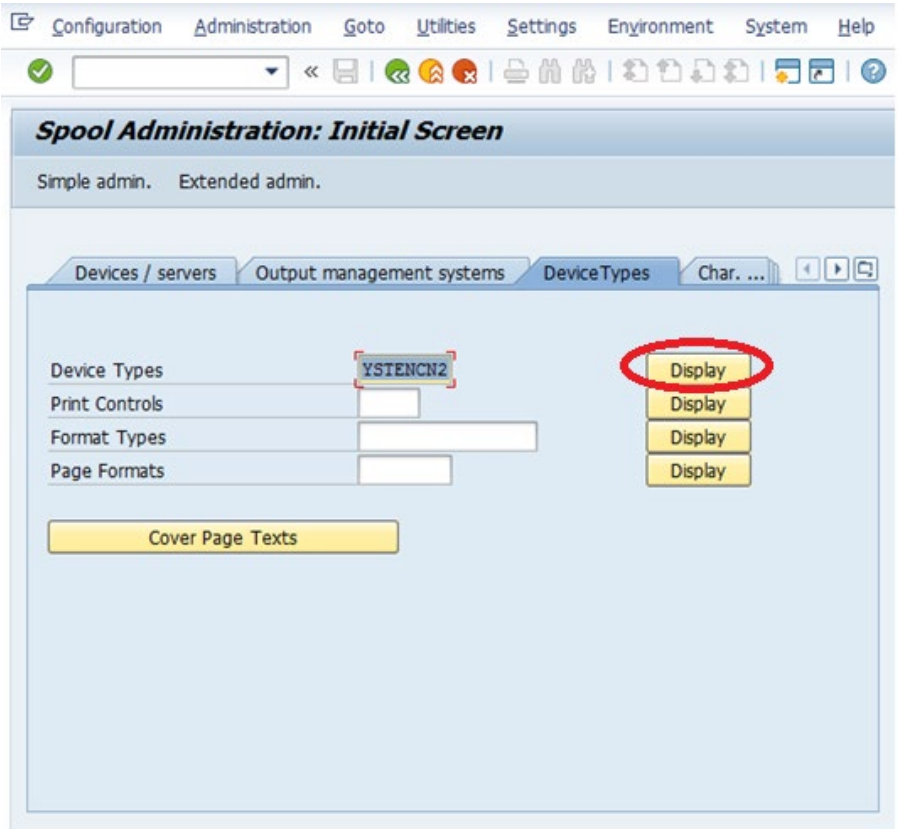
3. For Japanese device types that offer SATO Resident Bitmap fonts, the Japanese text will appear shorter than what is shown on the print preview of Smart Forms. This is because the width of the 1-byte characters in the SAP Japanese fonts is 0.5 times of the 2-byte characters. But in SATO Japanese fonts, the width of the 1-byte characters is slightly larger, about 0.6 times, of the 2-byte characters.

6.2.1 Unicode Printing for NX Series

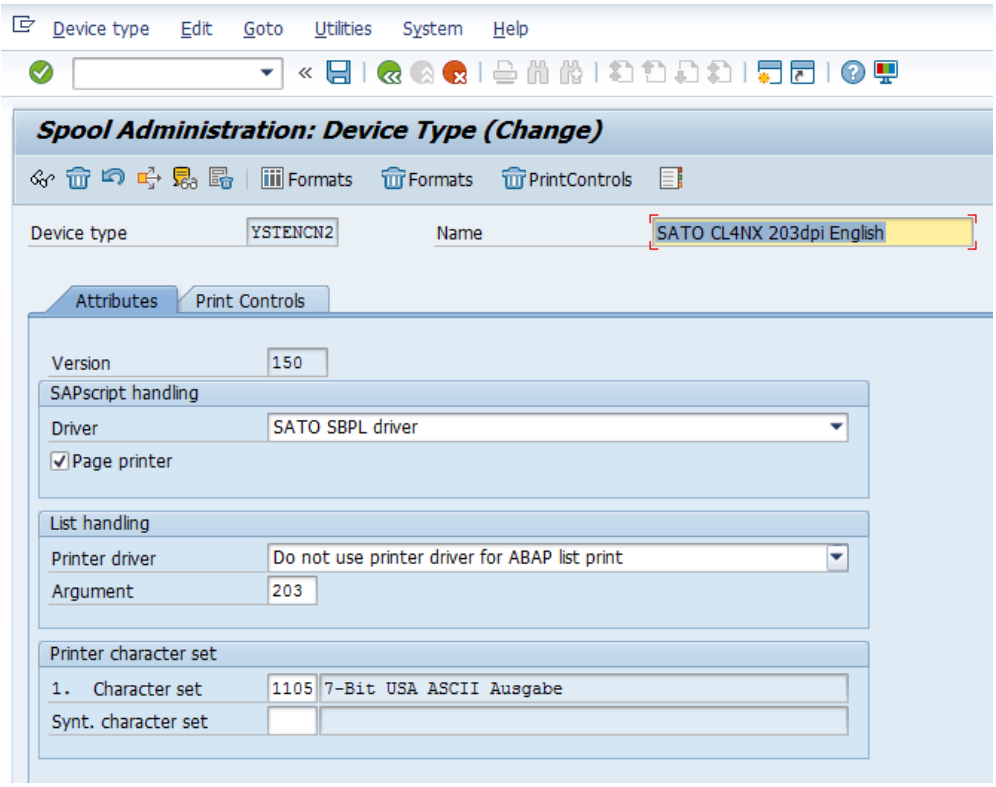
This section is about making of the device type Unicode printing for NX Series printers.

Creating Printer Font

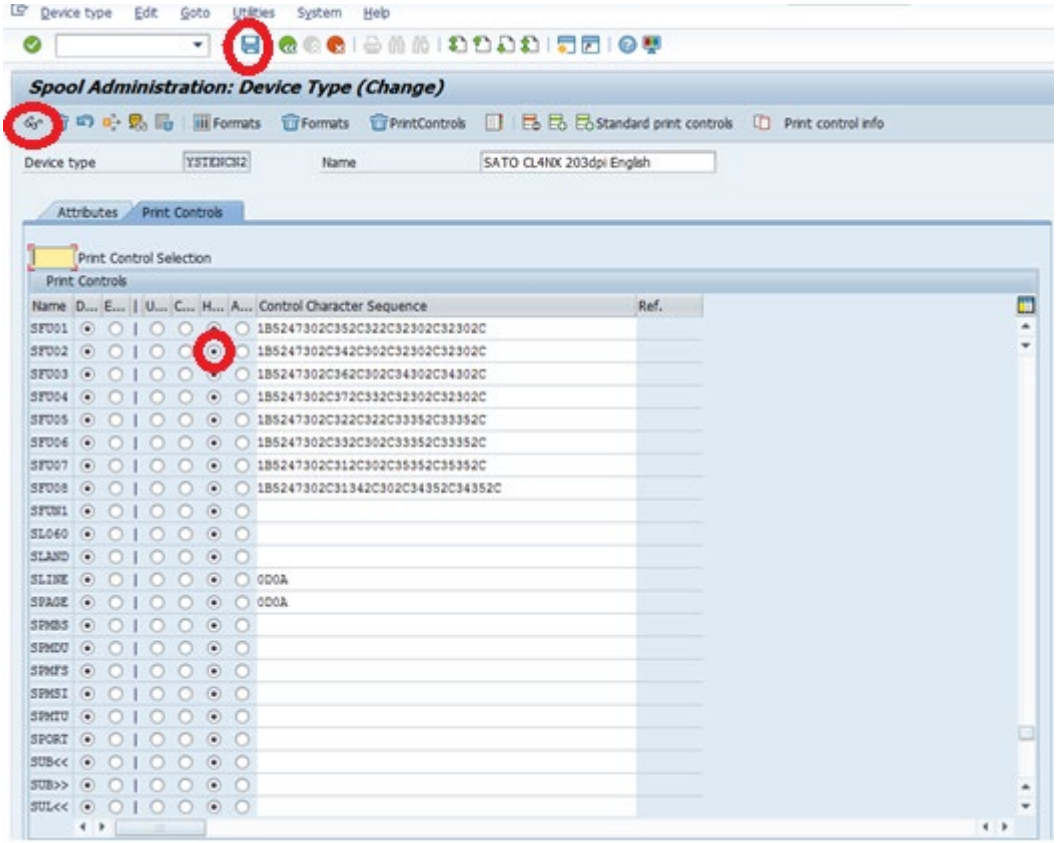
Please go to Spool Administration and choose the correct device type which you would like to use.



Select a “Print Controls” tab

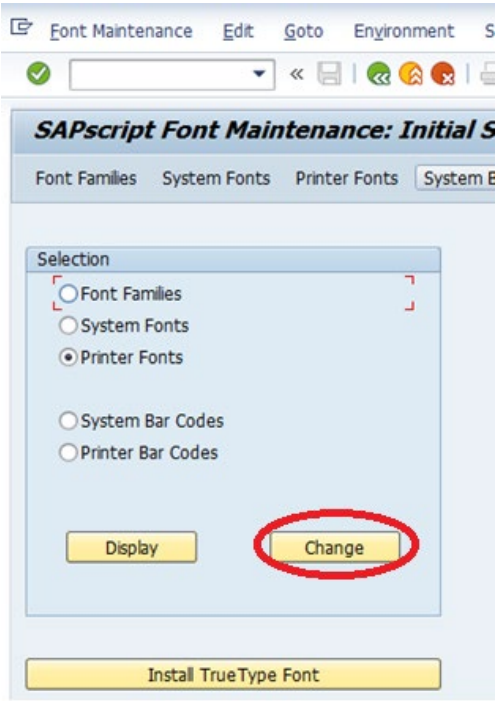


Click on the “Change” button to edit the values, key-in the new e.g SFU01 into the “Name” row section, check the “Hexadecimal” radio button, type the correct value into the “Control Character Sequence” and click the “Save” button. The meaning of HEX values has been elaborated further in this chapter.

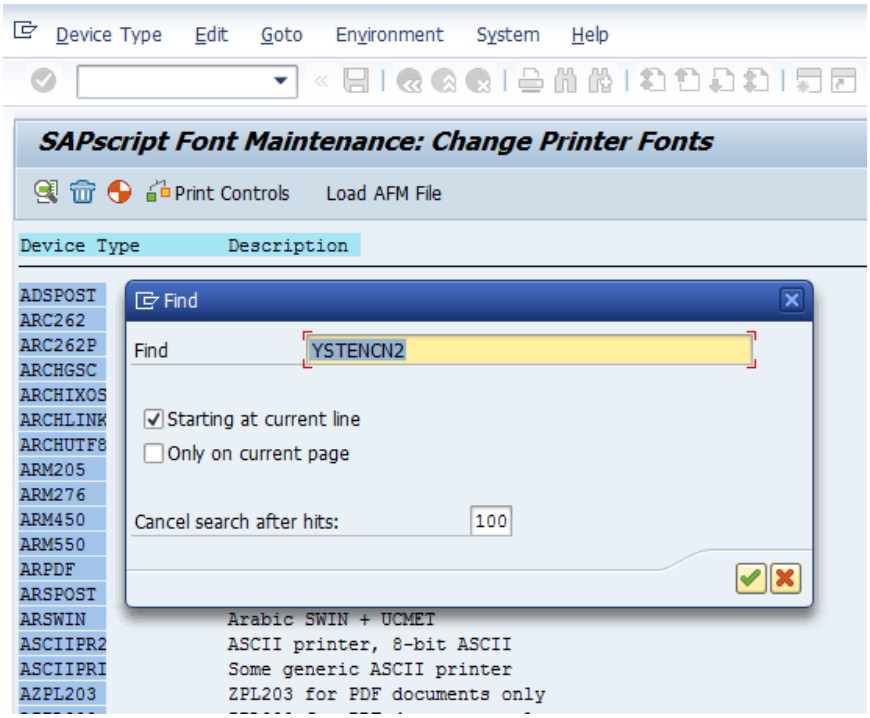


The control character sequence name ***must*** start with the “SFU” prefix containing two-digit numbers only at its end, for example: “SFU01”, SFU02”, “SFU15” etc.

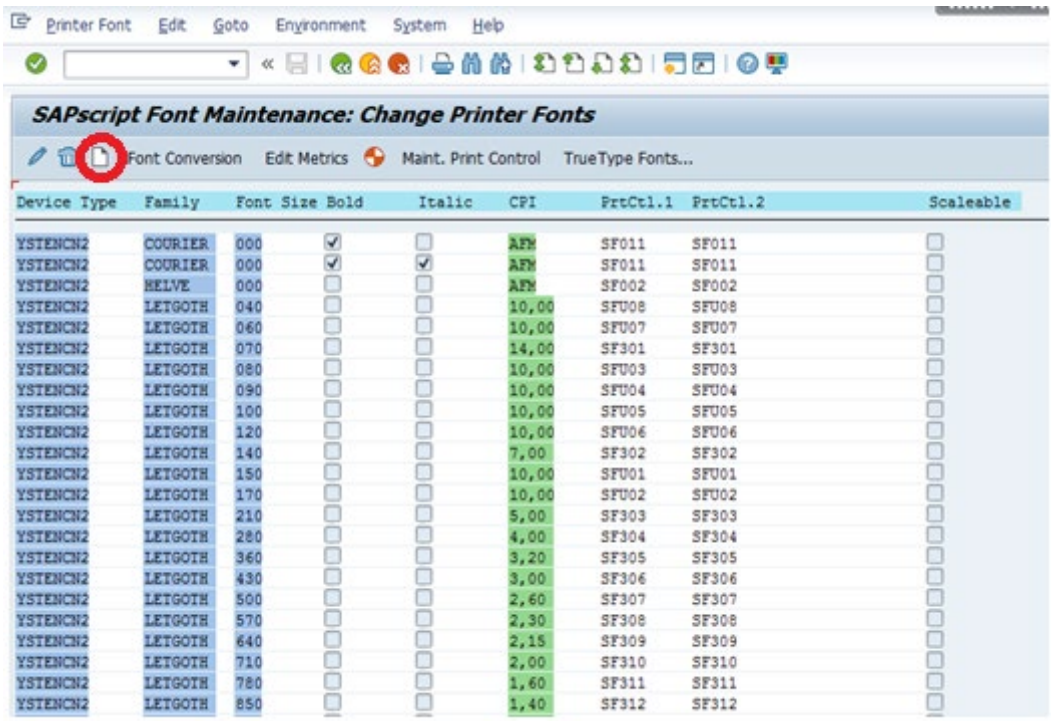
Please use SE73 transaction, select “Printer Fonts” and click on the “Change” button.



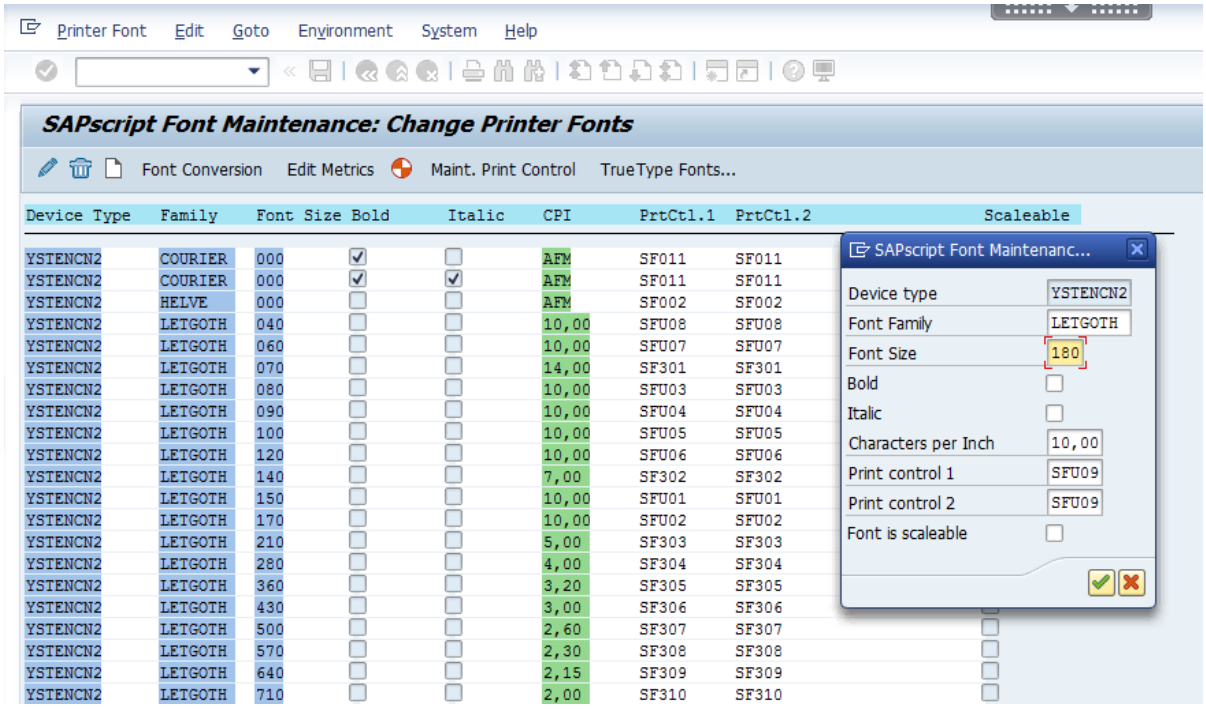
Use CTRL+F keys combinations to find your device type and click on the device type later.



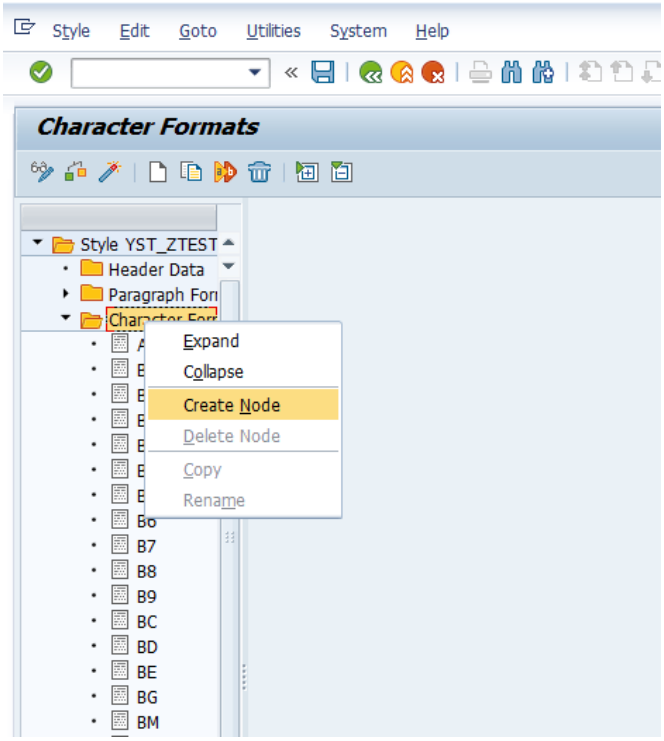
Create a new font.



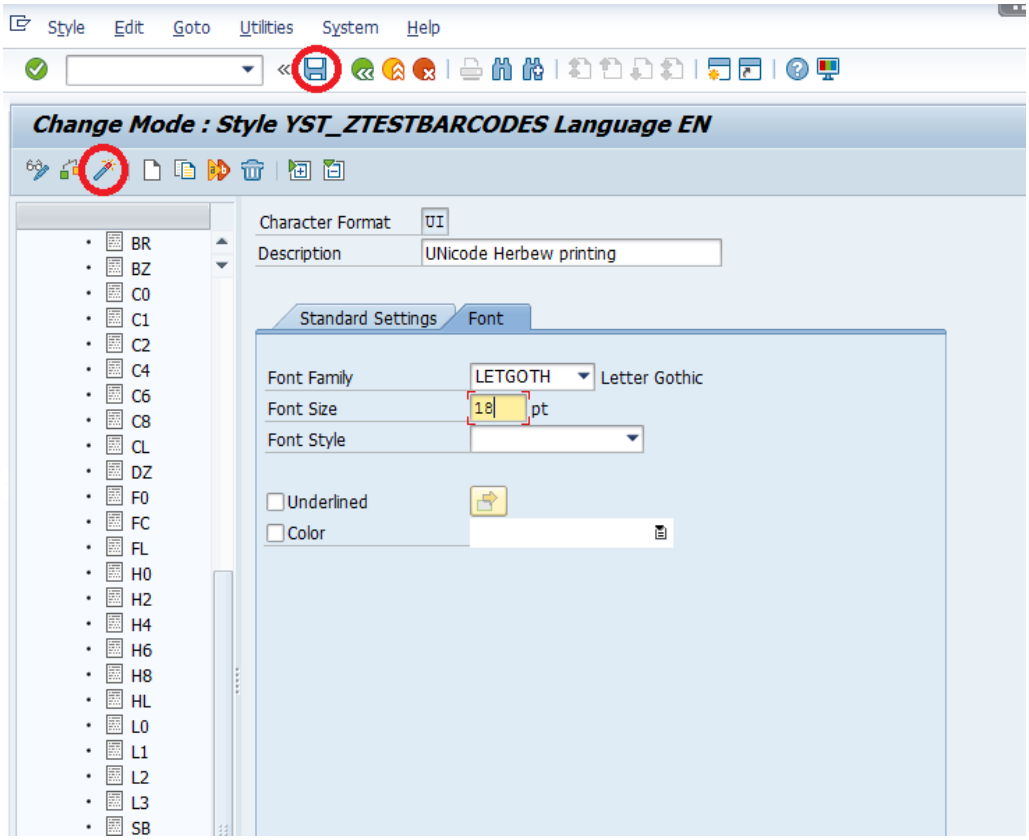
Fill out all necessary details and confirm your choice. Important – deselect “Font is Scalable”, provide a “Font Size” (180=18, this is the size we will be referring to in Smart Styles later), key-in the correct Print Controls name representing Unicode command (e.g.“SFU01” etc.) have used before and select the Font Family. The Font Family we use is LETGOTH but it can also be a different built-in font such as COURIER etc.
The entire idea to make Unicode (2-Byte) characters work is about calling a correct and previously created Smart Style’s tag in the Smart Form, configuring that Smart Style’s calling font tag by selecting a correct font and its size in the Smart Style (calling a font - making a reference to the just created on the below screen font, font passing the command parameters in SFU tag to the driver). There must be font’s identification (among many fonts having the same parameters) in the Smart Style’s tag, the Smart Style must know to call the correct/original font referring to the SFU print control user wants – there can’t be two the same fonts having the same parameters as the situation for the new tag on the Smart Form will be ambiguous if let’s say we want use LETGOTH 150. That is why we must use the “original” font for the new Smart Style’s tag as below.
In brief, the Smart Form calls your newly created Smart Style’s tag, that tag calls the original/unique device type’s font which kind of refers to the printer control (HEX command passing the command to the driver) being under that particular device type. When printing the Smart Form, the Smart Form calls the correct tag and the output device refers to that mentioned device type finally getting our final label having Unicode charters printed.



Creating a Tag in a Smart Style
It is how the tag is created in the Smart Style.

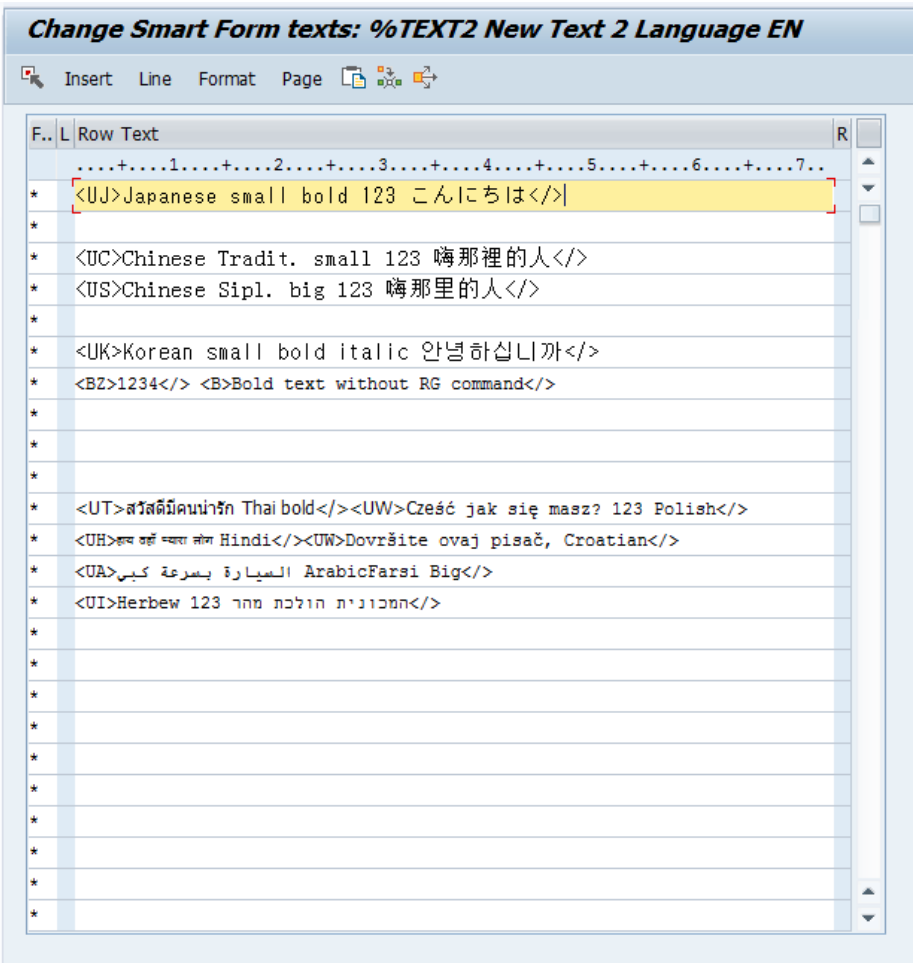


Choosing the correct font in the tag on the Smart Style. Please make sure to click the “Save” and “Activate” buttons when finished.



Font type here must be equal to font type in the Font Maintenance Window. Font size 18 here must be equal to the size 180 in the previous Font Maintenance Window.

Now the Smart Form is ready to call the Unicode language tags residing in the Smart Style.



Smart Form's Text Field Content

Smart Form's Final Printout on The Label

A few words about <RG> command construction and its processing:

<RG> a,b,c,ddd,eee,ffff…fff

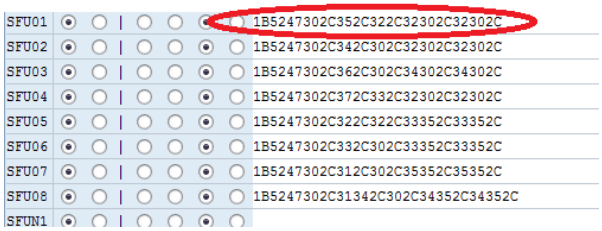
- Parameter

a: [Character code] Character code of print data to be specified to a parameter f. See the table below.
b: [Font set] Font type for printing See the table below
c: [Modification] 0: Standard
1: Italic
2: BOLD
3: BOLD+Italic
d: [Width] Valid range: 20 to 999 (dots)
Valid range: P09 to P99 (points)
e: [Height] Valid range: 20 to 999 (dots)
Valid range: P09 to P99 (points)
*One point is 0.35 mm.
f: [Print data] (character code)

<ESC>RG0,5,0,20,20,こんにちは

Example of Full RG Japanese Command in ASCII Containing the Printing Data

<esc> R G 0 , 5 , 2 , 2 0 , 2 0 ,
1B 52 47 30 2C 35 2C 32 2C 32 30 2C 32 30 2C



Mapping an Another Example RG Japanese Command to the Hex String

<ESC>RG0,5,0,20,20,
1B5247302C352C302C32302C32302C

Example of RG Japanese Command in ASCII and HEX With No Printing Data

<ESC>RG0,14,0,45,45,
1B5247302C31342C302C34352C34352C

Example of RG Hebrew Command in ASCII and HEX With No Printing Data

<ESC>CE1250<ESC>RG0,0,1,20,20,
1B4345313235301B5247302C302C312C32302C32302C

Example of RG With <CE> commands (for Polish, Croatian printing, etc.) With No Data

The print control contains the pure command only without the printing data inside. The parameter ‘a’ must be always fixed to the ‘0’ value, UTF-8.

[Font set list]

Parameter b	Font name	Font set	Font type	Character code range (UTF-16BE)
0	SATO Hebe Sans	WGL4	Hebe Serif	0020-FB02
1	SATO Hebe Sans Arabic	Arabic (Farsi) +ISO8859-1	Hebe Serif	0020-00FF, 0600-06FF FE70-FEFC
2	SATO Hebe Sans Thai	Thai +ISO8859-1	Hebe Serif	0020-00FF, 0E01-0E5B
3	SATO Hebe Sans Hindi	Hindi +ISO8859-1	Hebe Serif	0020-00FF, 0901-097F
4	SATO Gothic Tradional Chinese	WGL4	Hebe Serif	0020-FFE6
		Big5	MobileGothic	
		GB-18030	Crystalzhonghei	
		JISx0208(+NEC) JISx0201	MobileGothic	
		KSX 1001	MobileGothic	
5	SATO Gothic Japanese	WGL4	Hebe Serif	0020-FFE6
		JISx0208(+NEC) JISx0201	MobileGothic	
		KSX 1001	MobileGothic	
		GB-18030	Crystalzhonghei	
		Big5	MobileGothic	
6	SATO Gothic Simplified Chinese	WGL4	Hebe Serif	0020-FFE5
		GB-18030	Crystalzhonghei	
7	SATO Gothic Korean	WGL4	Hebe Serif	0020-FFE6
		KSX 1001	MobileGothic	
		JISx0208(+NEC) JISx0201	MobileGothic	
		GB-18030	Crystalzhonghei	
		Big5	MobileGothic	
8	SATO Silver Serif	WGL4	Silver Serif	0020-FB02
9	SATO Mincho Tradional Chinese	WGL4	Silver Serif	0020-FFE6
		Big5	Mincho	
		GB-18030	Shusong2M	
		JISx0208(+NEC) JISx0201	CrystalMincho	
		KSX 1001	Mincho	
10	SATO Mincho Japanese	WGL4	Silver Serif	0020-FFE6
		JISx0208(+NEC) JISx0201	CrystalMincho	
		KSX 1001	Mincho	
		GB-18030	Shusong2M	
		Big5	Mincho	
11	SATO Mincho Simplified Chinese	WGL4	Silver Serif	0020-FFE5
		GB-18030	Shusong2M	
12	SATO Mincho Korean	WGL4	Silver Serif	0020-FFE6
		KSX 1001	Mincho	
		JISx0208(+NEC) JISx0201	CrystalMincho	
		GB-18030	Shusong2M	
		Big5	Mincho	
13	SATO Roman Arabic	Arabic +ISO8859-1	Roman	0020-00FF, 0600-06FF, FDF2, FE70-FEFC
14	SATO Hebe Sans Hebrew	Hebrew +ISO8859-1	Hebe Serif	0020-00FF, 05B0-05F4, FB1D-FB4F

<RG> Command Font Set List

Parameter a	Official name	[Supplemental explanation]
858	DOS 858	Multilingual Latin 1 + Euro character Default Code page proprietary to SATO.
88591	ISO 8859/1	ISO 8859-1 Latin 1
88592	ISO 8859/2	ISO 8859-2 Latin 2
88599	ISO 8859/9	ISO 8859-9 Latin 5
850	DOS 850	Latin 1 Multilingual
852	DOS 852	Latin 2
855	DOS 855	Cyrillic
857	DOS 857	Turkish
737	DOS 737	Greek
866	DOS 866	Cyrillic II
1250	Win 1250	Central Europe
1251	Win 1251	Cyrillic
1252	Win 1252	Western Latin 1
1253	Win 1253	Greek
1254	Win 1254	Turkish
1257	Win 1257	Baltic
869	IBM 869	IBM 869 Greek
201	X0201	Japanese X0201 *1
UTF-8	UTF-8	Unicode encoding in UTF-8

<CE> Command Parameters against Code Pages

b	Fontname	Sample
0	SATO Hebe Sans	This is a fontsample.
8	SATO Silver Serif	This is a fontsample.
1	SATO Hebe Sans Arabic	هذا هو عينة من الخط.
13	SATO Roman Arabic	هذا هو عينة من الخط.
2	SATO Hebe Sans Thai	นี่คือตัวอย่างของตัวอักษร
3	SATO Hebe Sans Hindi	इस फॉन्ट का एक नमूना है.
14	SATO Hebe Sans Hebrew	.זהו דוגמא של הגופן
4	SATO Gothic Tradional Chinese	這是字體的樣本。
9	SATO Mincho Tradional Chinese	這是字體的樣本。
6	SATO Gothic Simplified Chinese	这是字体的样本。
11	SATO Mincho Simplified Chinese	这是字体的样本。
5	SATO Gothic Japanese	これはフォントのサンプルです。
18	SATO Mincho Japanese	これはフォントのサンプルです。
7	SATO Gothic Korean	이것은 글꼴의 샘플입니다.
12	SATO Mincho Korean	이것은 글꼴의 샘플입니다.

Multiple Language Samples

6.3 Smart Styles

Enter Transaction code '***/nsmartstyles***' to use the Smart Styles application.

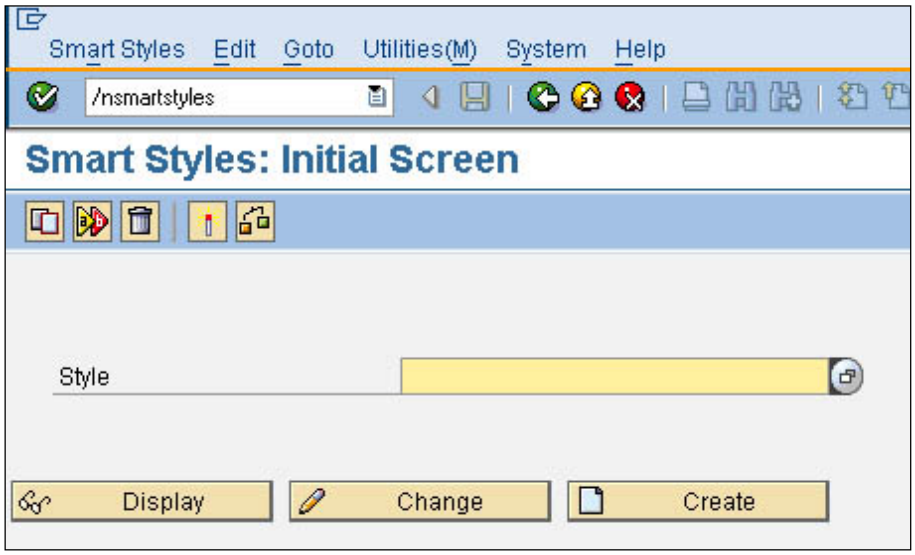


Figure 36 Smart Styles

Create or edit a Smart Styles to define the printing items which are to be used in the Smart Forms.

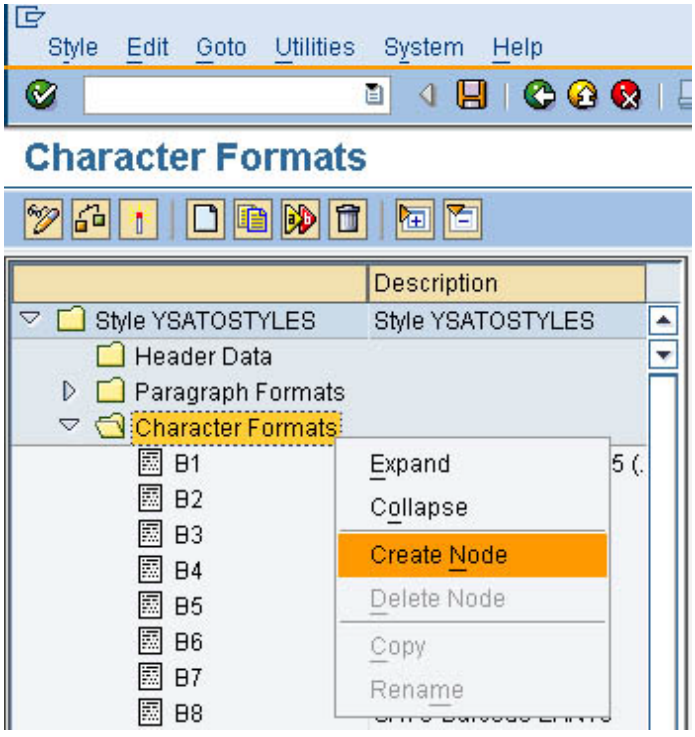


Figure 37 Create node of printing items

Right-click on the 'Character Formats' and choose 'Create Node'.

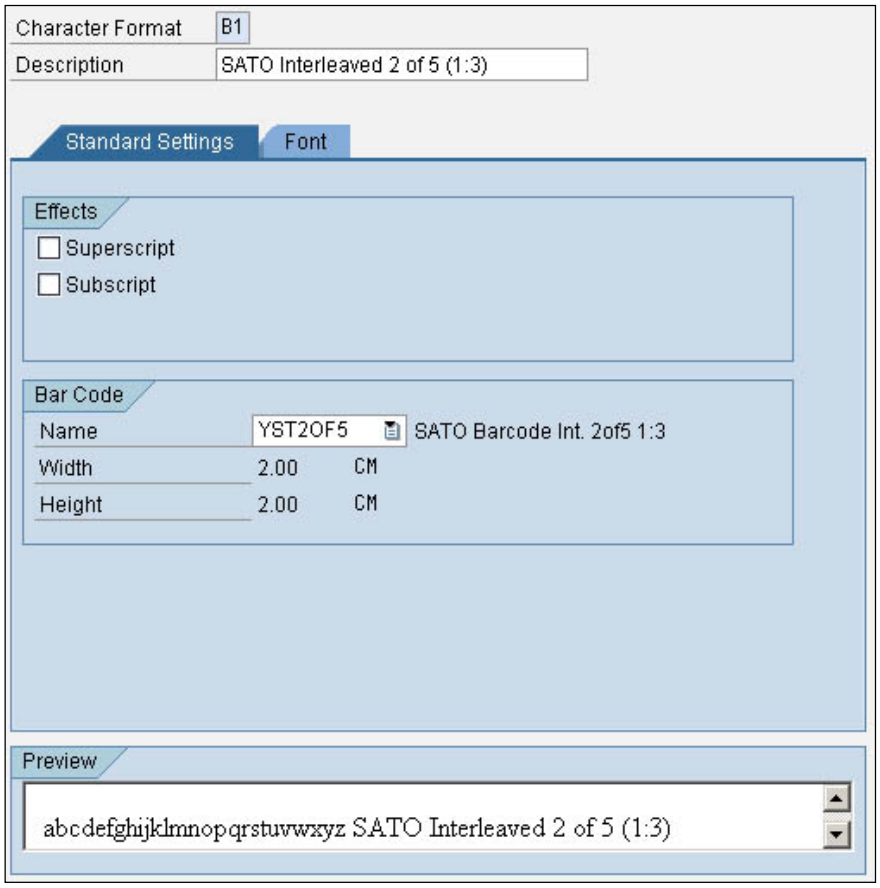


Figure 38 Defining Barcode printing item in Smart Styles

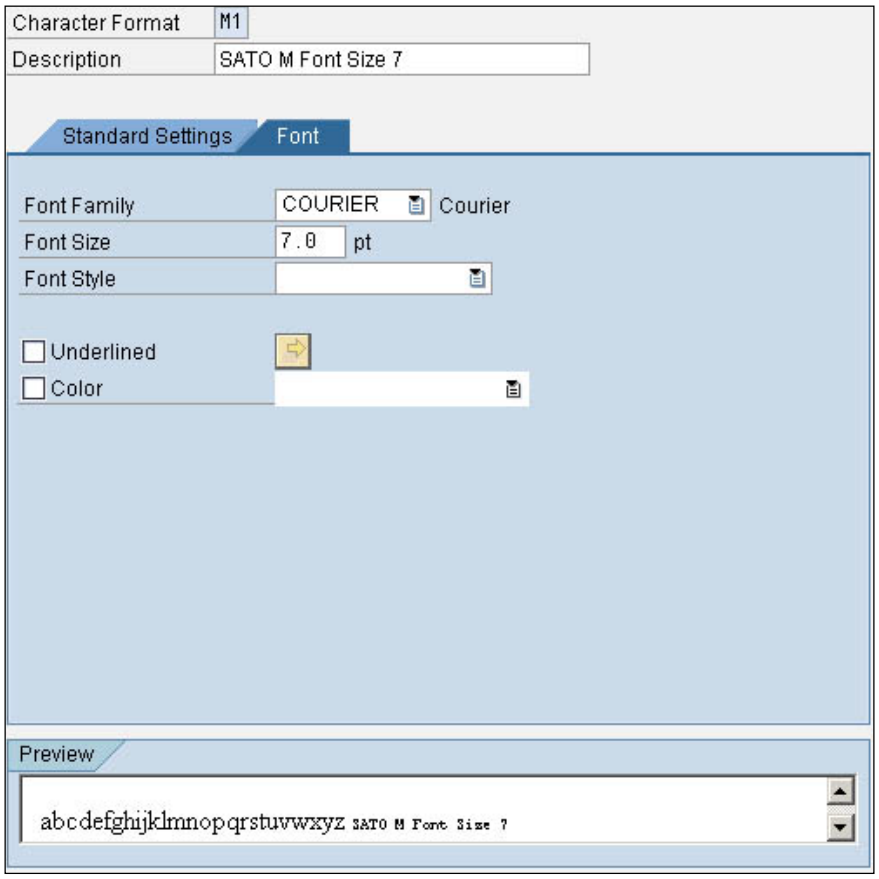


Figure 39 Defining Font Printing item in Smart Styles

After defining the necessary Barcode and Fonts as printing items, check and activate the Smart Styles.

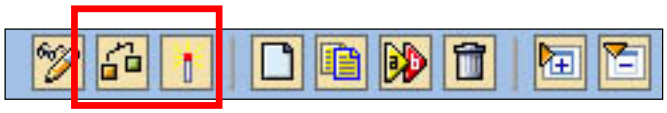


Figure 40 Check and Activate the Smart Styles

6.4 Smart Forms

Enter transaction code '***/nsmartforms'*** to run the Smart Forms application.

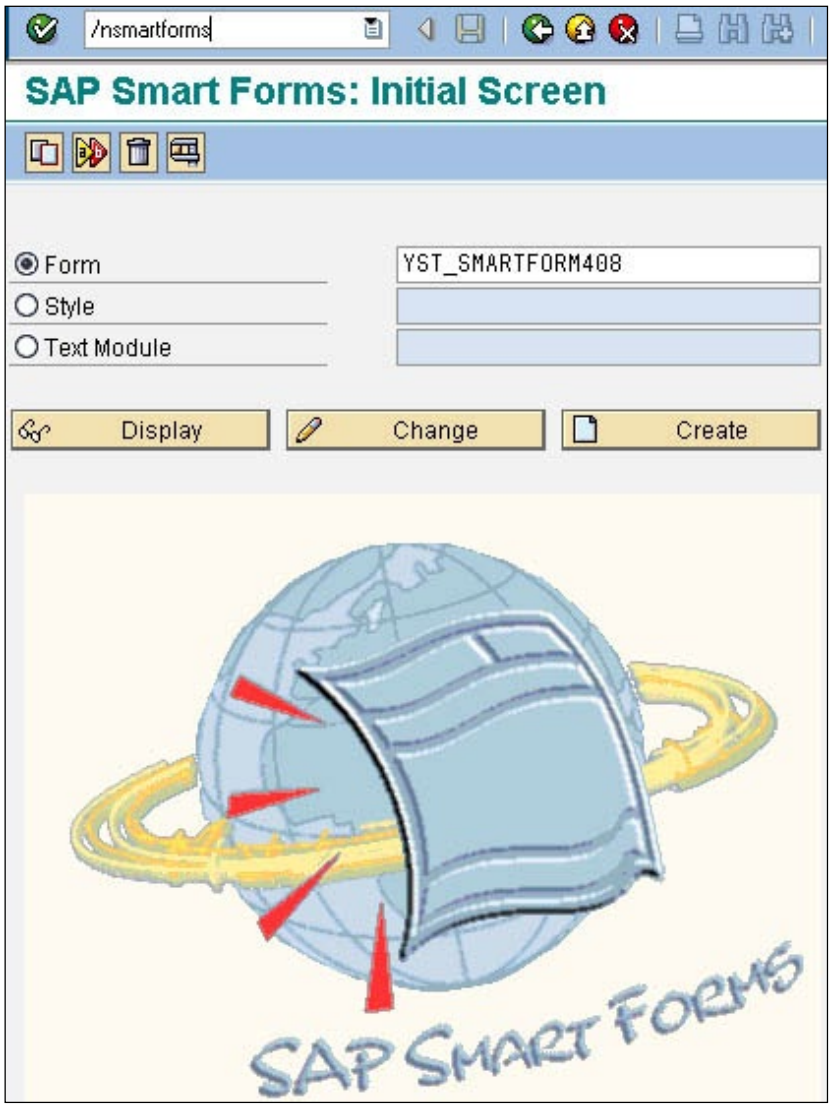


Figure 41 Smart Forms application

Create or edit a Smart Forms in which the name is prefixed with 'YST'.

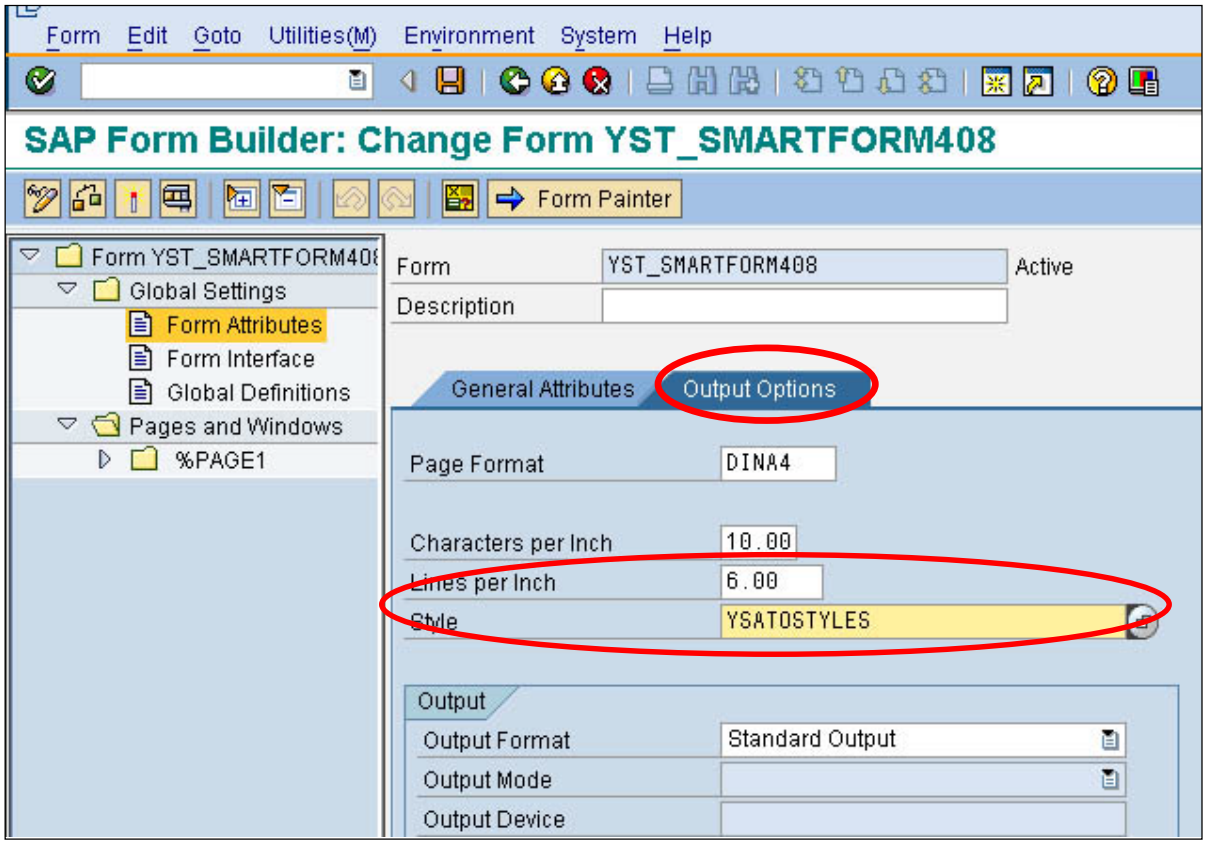


Figure 42 Applying the Smart Styles

Click on the 'Global Settings'->'Form Attributes', in the 'Output Options', apply the Smart Styles defined previously.

6.4.1 Adding Text

Right-click on the 'Page1', choose 'Create'->'Window'.

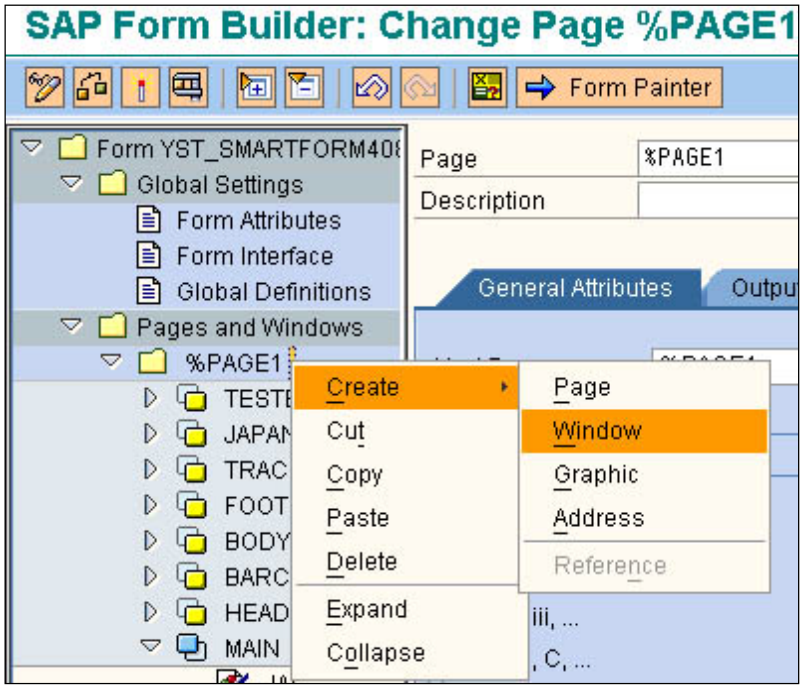


Figure 43 Creating Window

Give the Window component a meaningful name. Then right-click on it and create a ‘Text’ component.

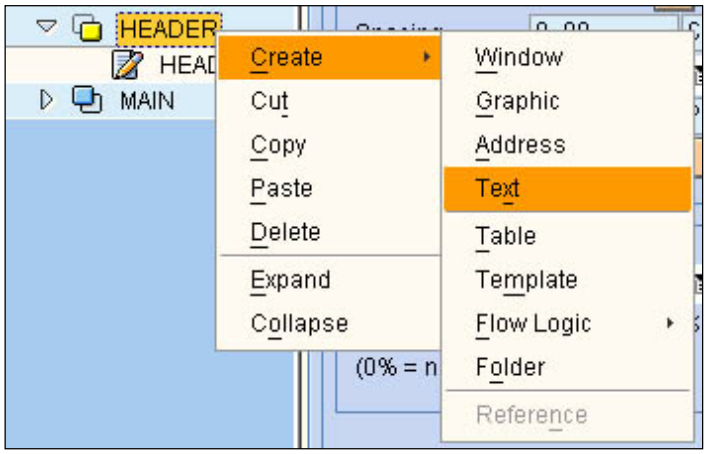


Figure 44 Creating Text Component

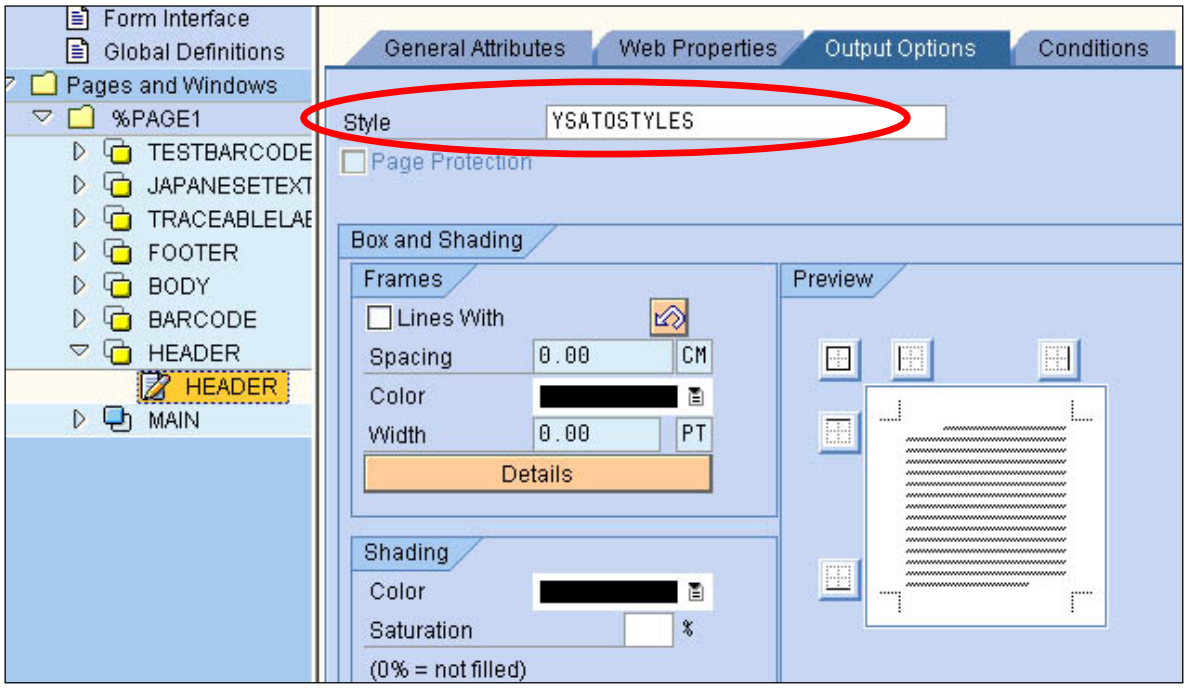


Figure 45 Defining Text Component

Under the ‘Output Options’ tab, select the Smart Styles which previously defined. So that the text printing item can be available to use.

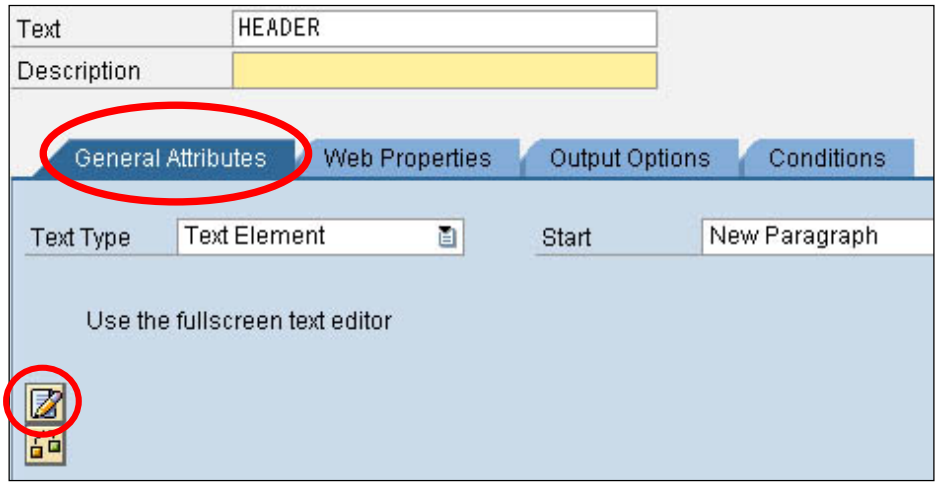


Figure 46 Adding Text

Click on the 'General Attributes' tab and click on the 'Editor' button to insert the text. Note: This procedure could be varied depending on the editor mode.

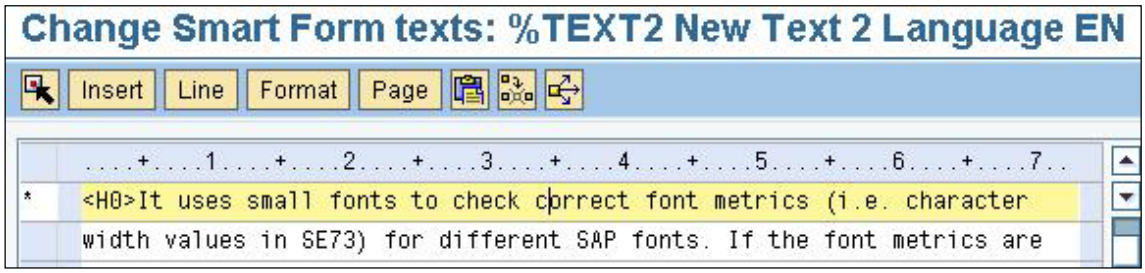


Figure 47 Entering the text with format

The message is embedded in format tags. In the above example, the message is included in **<H0>** and **</>** format tags which specify the SATO CG Triumvirate Font (ESC+RD). Format **H0** is a text printing item defined in the Smart Styles.

6.4.2 Adding Barcode

Define a 'Window' component under 'Page1' and give it a meaningful name. From this new window create a 'Text' component.

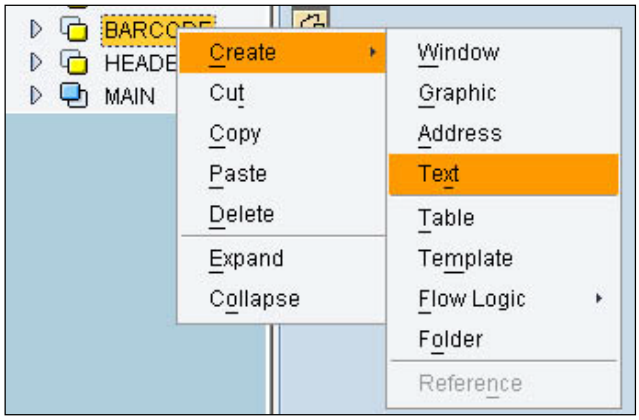


Figure 48 Creating Barcode component

Apply the Smart Styles in the 'Output Options'. Then in the Editor under 'General Attributes', type the Barcode value, and apply the Barcode printing format.

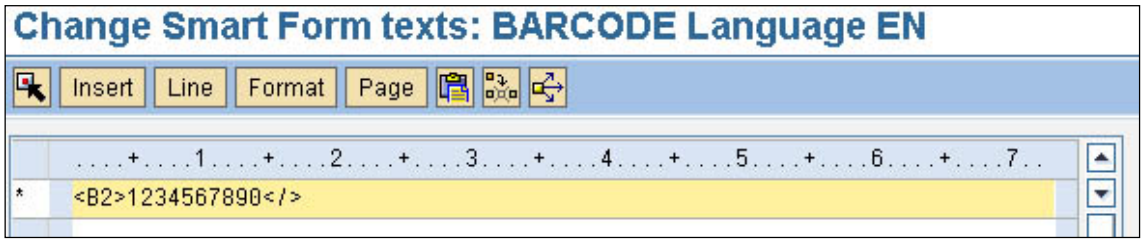


Figure 49 Entering Barcode value

The message is embedded in format tags. In the above example, the message is included in **<B2>** and **</>** format tags which specify the SATO Code 128A Barcode. Format **B2** is a Barcode printing item defined in the Smart Styles.

6.4.3 Adding Images

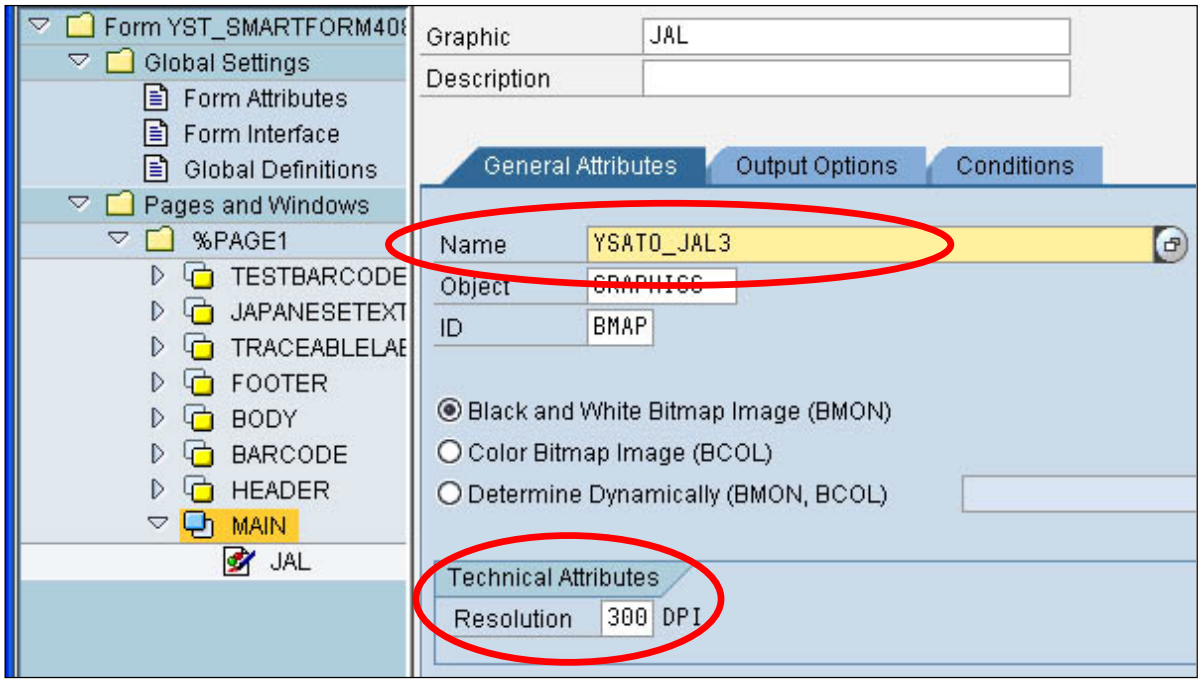


Figure 50 Creating Image component

All images must be imported to the SAP system through the ***SE78*** command before attaching them to the smart form. Select the required image from the Name drop-down list under the General Attributes. Then key in the Resolution information for the image. For example, if the image is to be printed in a 300 resolution printer, then select 300 from the Resolution field.

Currently, the images supported by SATO-SAP Printer Driver have the following constraints:

- Only 'Black and White Bitmap Images' are supported and they should be limited to 1bpp (bit per pixel) color deepness
- The images cannot be '*compressed*' when uploaded using Transaction code ***SE78***.

6.4.4 Positioning Printing Components

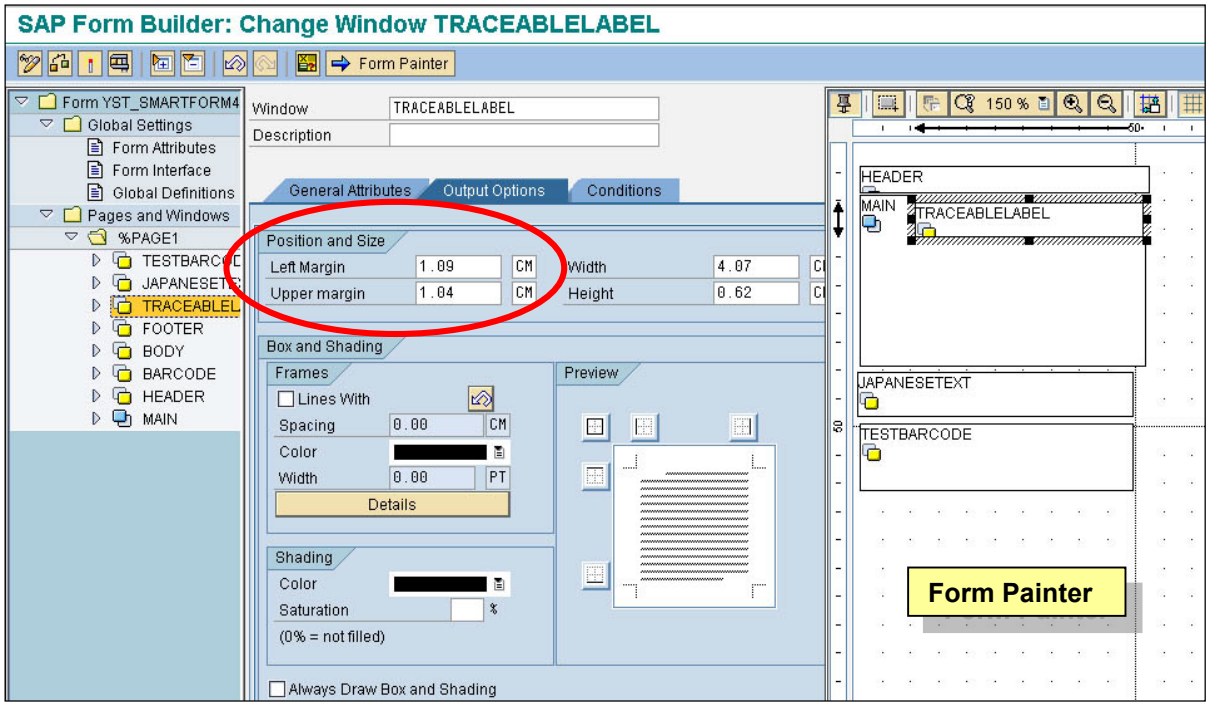


Figure 51 Positioning printing items

The positions of the printing items can be adjusted by drag & drop the components in the 'Form Painter'. Alternatively, it can be done by manipulating the values in the Left and Upper margin fields under the 'Output Options' tab of the window component.

6.4.5 Printing the Smart Forms

After the Smart Forms has been made, it must be checked and activated before it can be printed.

Figure 52 Check and Activate the Smart Forms

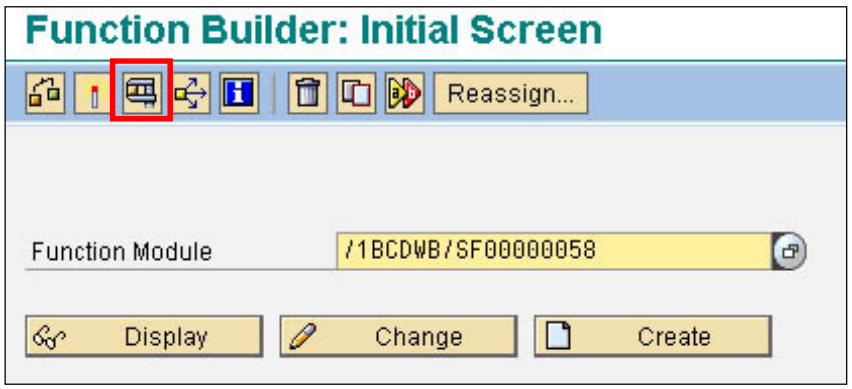


Figure 53 Printing Smart Forms

Click the 'Print' button to continue.

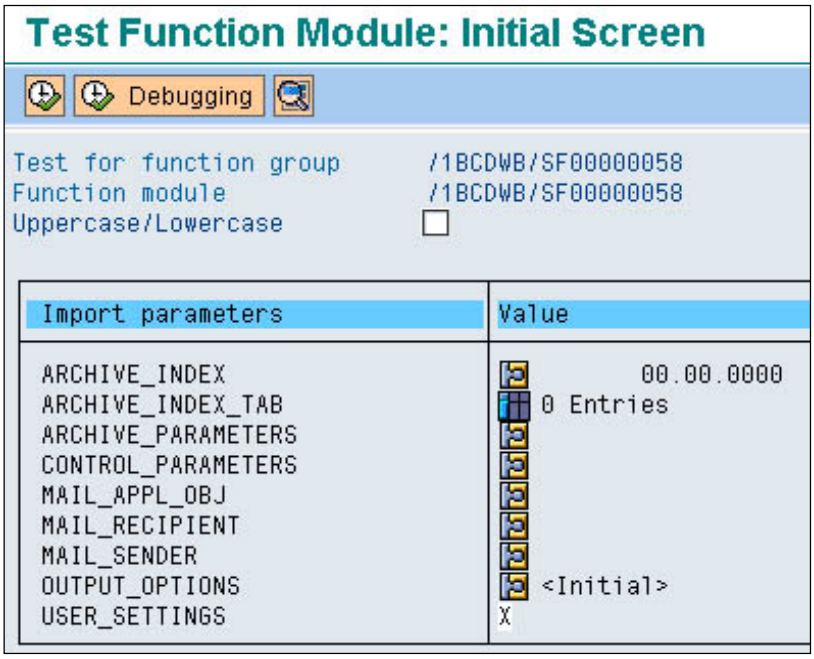


Figure 54 Printing Screen

Click the 'Execute' button to continue.

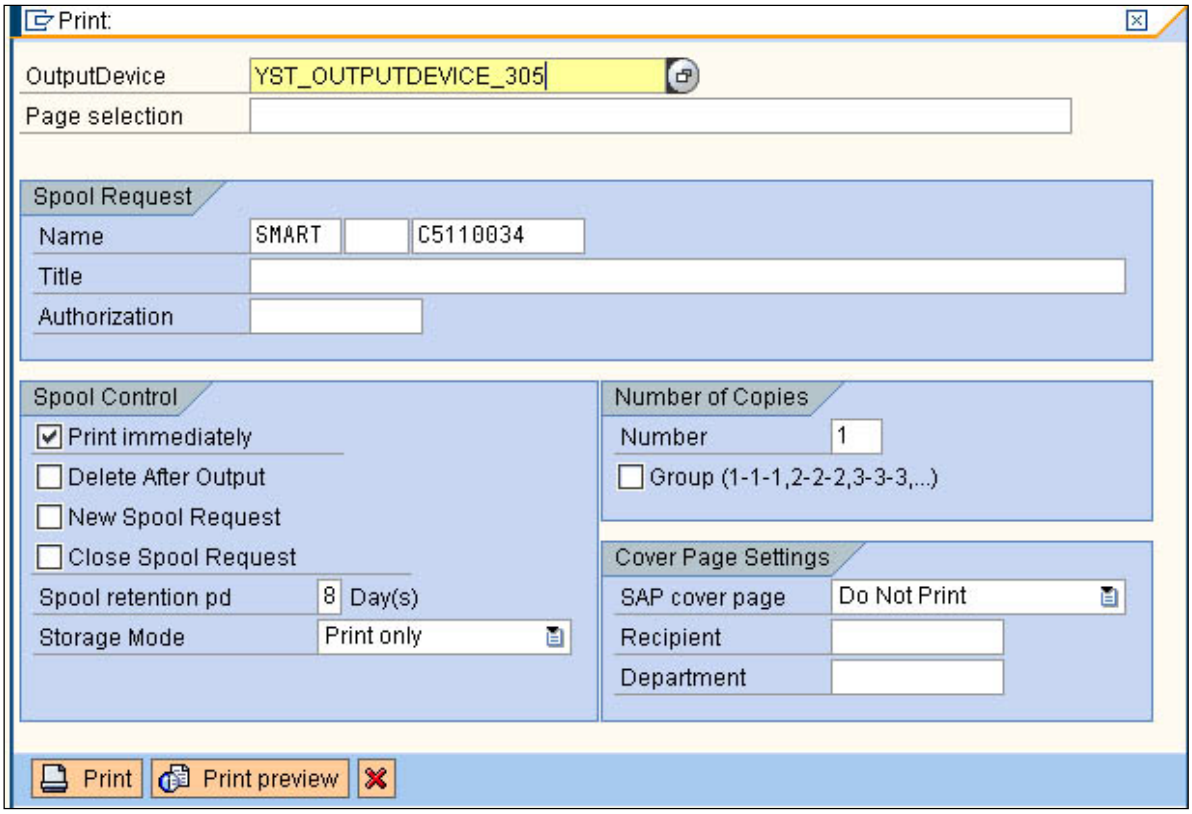


Figure 55 Printing Screen - Select the output device

Select the required Output Device and check on the 'Print Immediately' checkbox. Then click the 'Print' button to print.

6.5 System Commands

Users can specify the System Commands of SBPL in the Smart Forms label by using the Command nodes.

Right-click on the Window node->Create->Flow Logic->Command to display the Command node feature.

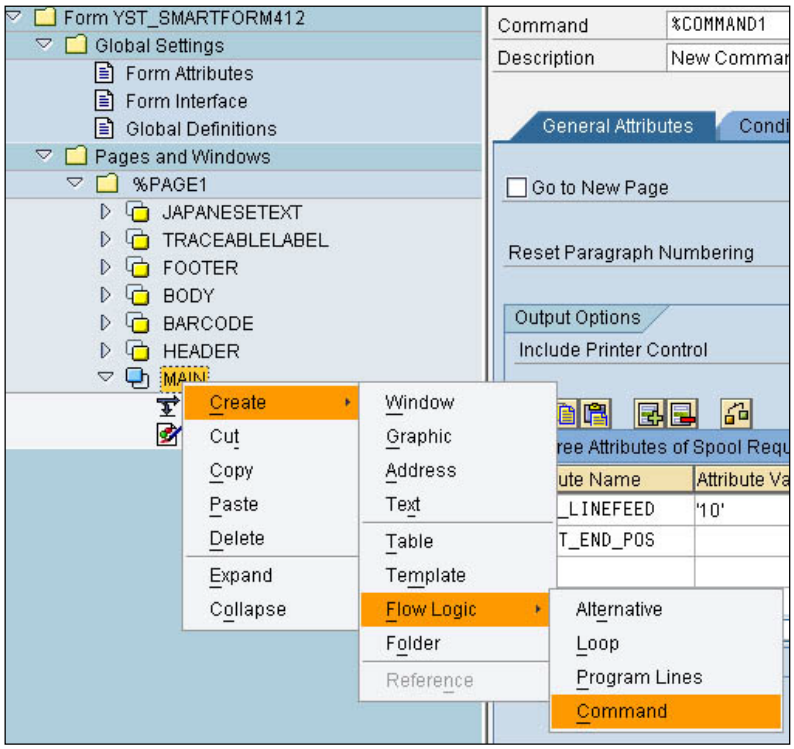


Figure 56 Defining System Command using Command node

Under the 'Output Options', the user is to define the System Command in the Name-Value pairs format. **The value must be enclosed within the single quote character (') or empty, depending on the command.**

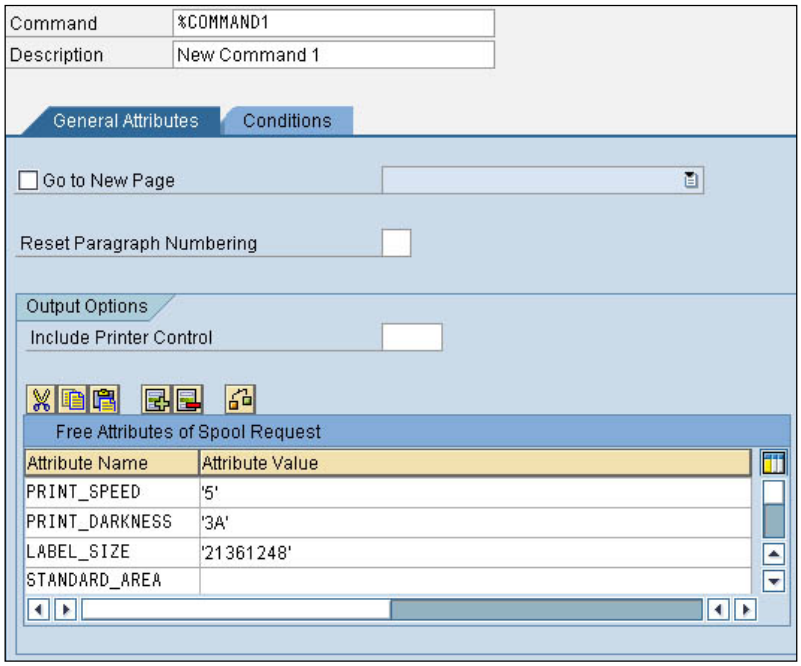


Figure 57 Name-Value pairs information

The following are the available system commands:

Function	Command Name	Command Value	SBPL Command	Remarks
Print Speed	**PRINT_SPEED**	1~11	ESC+CS	
Print Darkness	**PRINT_DARKNESS**	ab, a: 1~ 5 b: A~F	ESC+#E	
Label Size	**LABEL_SIZE**	Refer to the command specification	ESC+A1	The printer driver will generate a default ESC+A1 command, based on the label size of designed Smart Forms if this System command is not specified.
Start Print Correction	**START_POINT**	Refer to the command specification	ESC+A3	The printer driver will generate a default ESC+A3 command, based on the position of the designed Smart Forms if this System command is not specified.
Enlargement of Print Area	**ENLARGEMENT_AREA**	No value is needed	ESC+AX	
Standard Print Area	**STANDAR_AREA**	No value is needed	ESC+AR	
Print End Position	**PRINT_END_POS**	No value is needed	ESC+EP	
Multiple Cutting	**MULTIPLE_CUT**	0~9999	ESC+~(Null)	This command is valid only when the printer is equipped with cutter

No. of Labels per Cut Segment	**CUT_SEGMENT**	0~9999	ESC+~A	This command is valid only when the printer is equipped with cutter
Cutting Operation	**CUT_OPERATION**	No value is needed	ESC+~B	This command is valid only when the printer is equipped with cutter
Cut Number Unit	**CUT_CTCOMMAND**	0~9999	ESC+CT	This command is valid only when the printer is equipped with cutter
Eject and Cut	**CUT_NCCOMMAND**	No value is needed	ESC+NC	This command is valid only when the printer is equipped with cutter
Auto Linefeed	**AUTO_LINEFEED**	0~999	ESC+E	
90 degree Text Rotation	**ROTATE_90_x**	Name of Window to be rotated	ESC+%1	x is any number to make sure the command name is not repeated in the Smart Forms
180 degree Text Rotation	**ROTATE_180_x**	Name of Window to be rotated	ESC+%2	x is any number to make sure the command name is not repeated in the Smart Forms
270 degree Text Rotation	**ROTATE_270_x**	Name of Window to be rotated	ESC+%3	x is any number to make sure the command name is not repeated in the Smart Forms
Page Number	**PRINT_QUANTITY**	Number of pages to print	ESC+Q	It is print command is not specified, the page is printed once. Example of the value: **'%PAGE2:4'** This means the page with the name "%PAGE2" will be printed 4 times. The subsequent page number can be added with a comma separator. For example, **'%PAGE2:4, %PAGE3:3'** This means page '%PAGE2' is printed 4 times and page '%PAGE3' is printed 3 times
Inverse Print	**INVERSE_PRNTAREA**	vvvvv,hhhh,aaaa, bbbbb v: vertical position h: horizontal position a: length of	ESC+(	It can specify multiple inverse print area by using a semicolon ';' as the separator

		vertical b: length of horizontal		
Print Darkness (#F command)	**PRINT_DARKNESS_F**	ab, a: 1~ 10 b: A~F	ESC+#F	This commands for supported model SG112R/ex.
Print Motion Mode	**PRINTMOTION_MODE**	0-8	ESC+PM	To specify motion mode temporarily.
Print Off-set	**LABELSTOP_OFFSET**	abcc, a: 0~3 b: +/- c:00~99(dot)	ESC+PO	To specify adjustment of label stop position during every motion temporarily.

Table 7 System Commands

It is important to refer to the command specification of the printer models to understand the correct range of value can be used for the Command values. Note that the Command Names are case-sensitive.
System command should be used carefully. Invalid input may result in an unexpected outcome of the printout.

The table below shows the supported System Commands on models.

Model / Command	PT4xxe/ MB4xxi/HR224	CT4xxi/ CGxxx	LT4xx/MR4xxe /M84Pro/CLxNX	S-8x-ex
PRINT_SPEED	O	O	O	O
PRINT_DARKNESS	O	O	O	O
LABEL_SIZE	O	O	O	O
START_POINT	O	O	O	O
ENLARGEMENT_AREA			O	O
STANDARD_AREA			O	O
PRINT_END_POS		O	O	O
AUTO_LINEFEED	O	O	O	O
ROTATE_xx_X	O	O	O	O
PRINT_QUANTITY	O	O	O	O
INVERSE_PRNTAREA		O	O	O

Table 8 System Commands on Models

The table below shows the supported Cutting Commands on models.

Model / Command	PT4xxe/ MB4xxi/ HR224	CT4xxi/ CGxxx	LT4xx /M84Pro /CLxNX	MR4xxe	S-8x-ex
MULTIPLE_CUT		O*	O*	O*	O*
CUT_SEGMENT		O*	O*	O*	O*
CUT_OPERATION		O*	O*	O*	O*
CUT_CTCOMMAND		O*		O*	
CUT_NCCOMMAND		O*		O*	

Table 9 Cutting Commands on Models

*: Only possible when the Cutter unit is installed.

6.5.1 Text and Image Rotation

To rotate a text or an image on Smart Forms, the user is to create a command in the window to be rotated. The name of the parameter (e.g., ROTATE_180_x) should not be repeated. The image below is an example of how the rotated text can be setup:

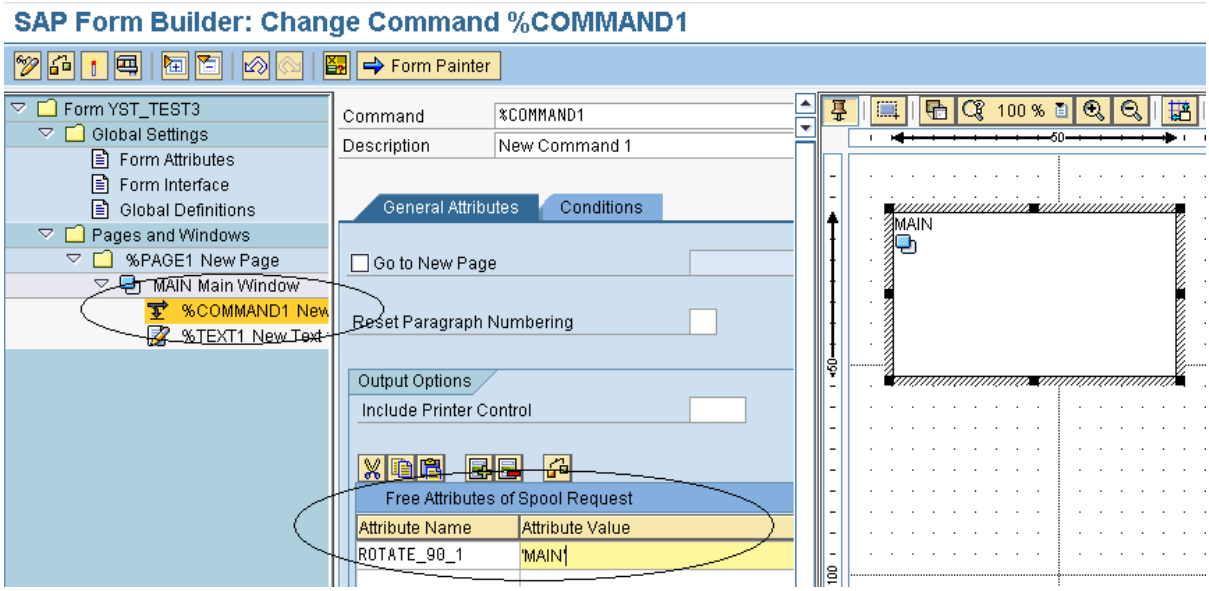


Figure 58 Text Rotation

Rotation Result:

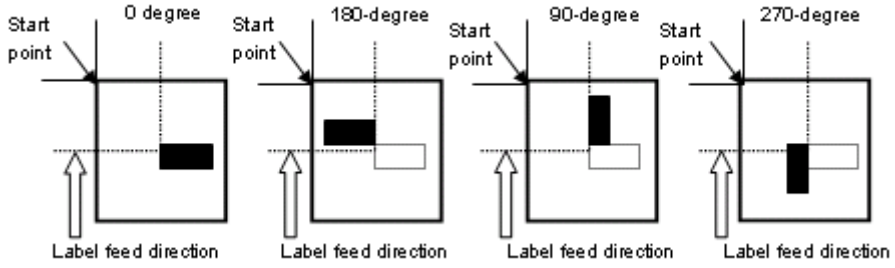


Figure 59 Rotation result

Please refer to the command specification for the behavior of the rotation.

There are a few restrictions on the Rotation functions:

- Smart Form will not display the rotated text on the print preview. The user is to adjust the position of the window by checking the actual printout.
- The rotated text should not have more than 1 line.
- Each rotated window should have only 1 line of text or only 1 image.

6.5.2 Setup Label Size Using Command

This is the alternative method to setup custom label size using SATO Printer Language, A1 command. This will overwrite the standard Label size value by Page Format setting of Smart Forms. Users should consult the SBPL manual for the A1 command before using it in Smart Forms. As described in Table 7 System Commands, add the **LABEL_SIZE** command with the Parameter of label height follow by label width with the correct number of digits as described in the SBPL manual for a specific printer.

Note: GL printer could not accept a longer length than the height of label for label width. Thus, the Landscape Orientation setup on the printer (using LCD Menus and Buttons) should utilize (that means the shorter length of the label is the width and the longer length is height.)

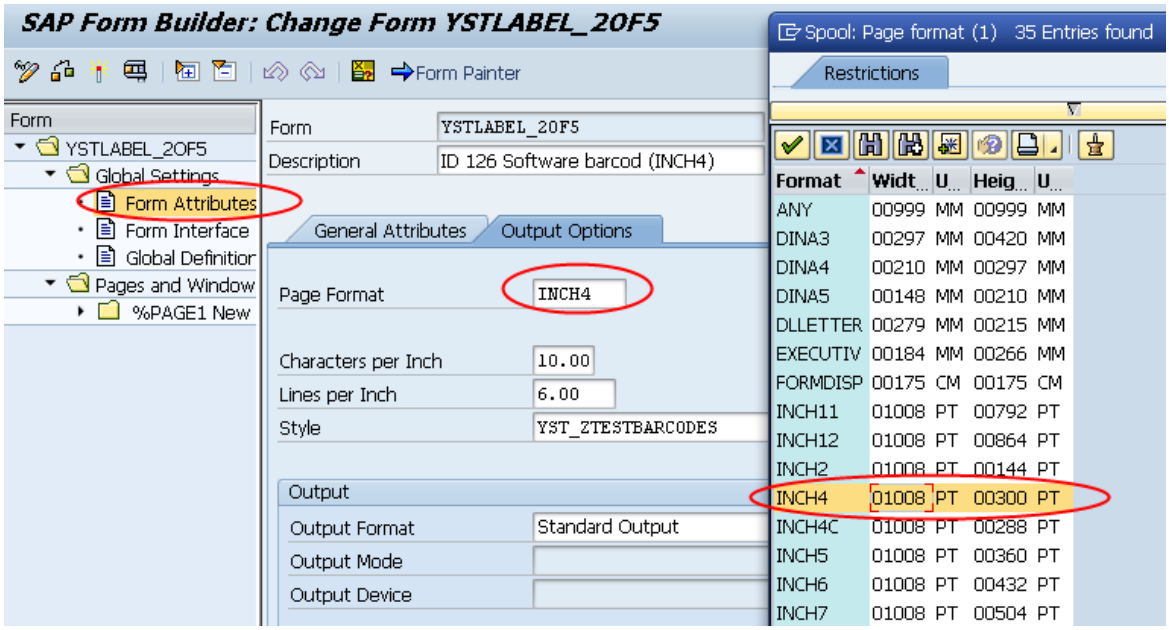


Figure 60 Standard Label Size Setup with an appropriate Page Format setting

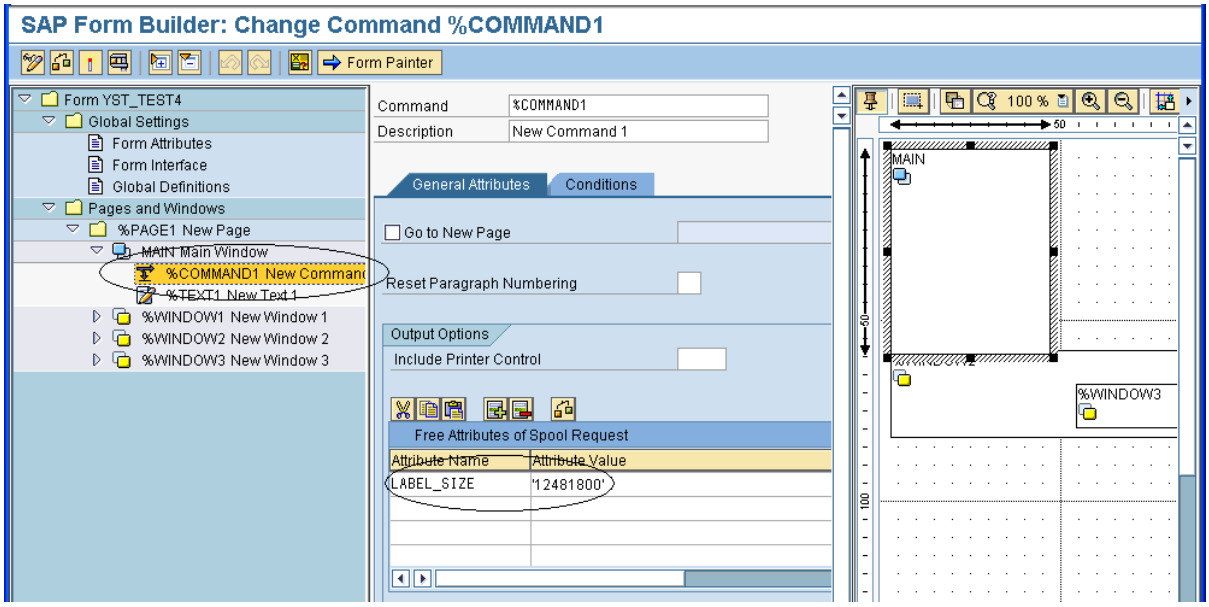


Figure 61 Custom Label Size Setup with Command

6.5.3 Inverse Color Print Area Setup

To define the inverse print area in Smart Form, the user is to create a command in the window. The name of the parameter (INVERSE_PRNTAREA) should be placed. The image below is an example of how to setup the inverse print area.

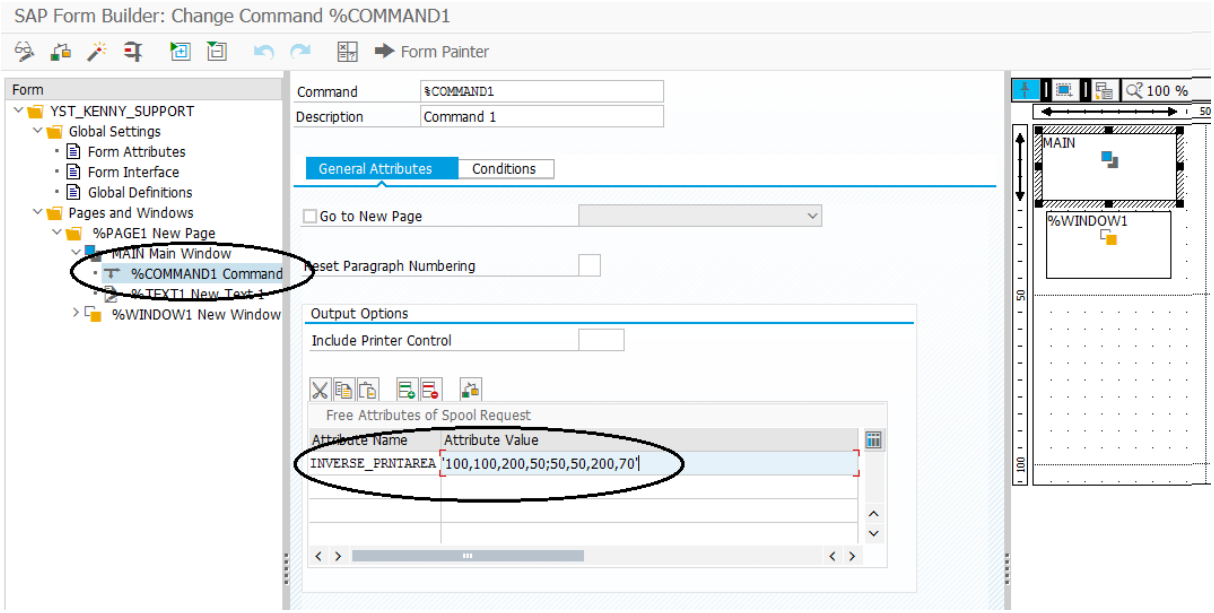
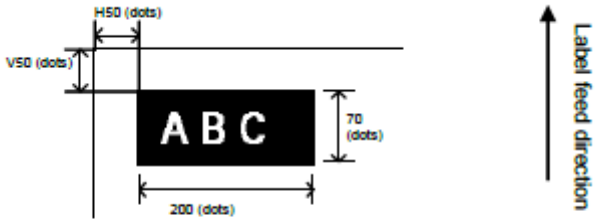


Figure 62 Inverse print area Setup. (Example print two Inverse area, V100H100 length 200 height 50 and V50H50 length 200 height 70)



[Note]
For setting, keep the black print area under 30% of overall label.

【Valid Range】

Model	Valid Range : Horizontal Line Length (dot)	Valid Range : Vertical Line Length (dot)
M84Pro	8～832	8～1424
CT400DT/TT	8～832	8～3200
CT410DT/TT	8～1248	8～4800
CL4NX/CL4NX Plus/CL4NX-J/CL4NX-J Plus, PWNX, S84-ex 203 dpi, S84NX 203dpi, CL4-SXR TT203/CL4-SXR TT203 (JP)	8～832	8～20000
CL4NX/CL4NX Plus/CL4NX-J/CL4NX-J Plus, S84-ex 305 dpi, S84NX 305dpi, CL4-SXR TT305/CL4-SXR TT305 (JP)	8～1248	8～18000
CL4NX/CL4NX Plus/CL4NX-J/CL4NX-J Plus, S84-ex 609dpi, S84NX 609dpi, CL4-SXR TT609/CL4-SXR TT609 (JP)	8～2496	8～9600
CL6NX/CL6NX Plus/CL6NX-J/CL6NX-J Plus, S86-ex 203 dpi, S86NX 203dpi, CL6-SXR TT203/CL6-SXR TT203 (JP)	8～1216	8～20000
CL6NX/CL6NX Plus/CL6NX-J/CL6NX-J Plus, S86-ex 305 dpi, S86NX 305dpi, CL6-SXR TT305/CL6-SXR TT305 (JP)	8～1984	8～18000

Limitations 7

Please note the following are not supported by the SATO PDL Driver:

- Compressed graphics and color bitmap
- Underlined, superscript and subscript text
- There could be some slight variations of font size in Smart Forms and the actual font size printed from the SATO printer. This is due to the size conversion and rounding up issues.
- Courier Font (which will be mapped to SATO Fixed Width Scalable font) does not support 8 points or lower font size printing in 203dpi printer. It will be printed in a slightly larger font size instead.
- Some European characters from ISO8859-1 and Codepage 850 device types are not available from the printer. Please refer to the command specifications of the printer for details.

For other functionalities of SATO printers that are not supported by the SATO PDL driver, please approach the technical team of SATO for customization requests at:
https://sato-globalhelp.zendesk.com/hc/en-001/requests/new

Appendix 8

8.1 Print Controls List for Barcode

For the control list of New Barcode Technology, please refer to Table 3 Barcode Print Controls.

The following is the control list for the old barcodes:

Barcode (Ratio 1:3)

NW-7 (CODABAR)

SAP Print Control	Narrow Bar Width	Mapped to SBPL Command
SB101	1	ESC+B001
SB102	2	ESC+B002
SB103	3	ESC+B003
SB104	4	ESC+B004
SB105	5	ESC+B005
SB106	6	ESC+B006
SB107	7	ESC+B007
SB108	8	ESC+B008
SB109	9	ESC+B009
SB110	10	ESC+B010
SB111	11	ESC+B011
SB112	12	ESC+B012

Interleaved 2 of 5

SB121	1	ESC+B201
SB122	2	ESC+B202
SB123	3	ESC+B203
SB124	4	ESC+B204
SB125	5	ESC+B205
SB126	6	ESC+B206
SB127	7	ESC+B207
SB128	8	ESC+B208
SB129	9	ESC+B209
SB130	10	ESC+B210
SB131	11	ESC+B211
SB132	12	ESC+B212

JAN/EAN13

SB141	1	ESC+B301
SB142	2	ESC+B302
SB143	3	ESC+B303
SB144	4	ESC+B304
SB145	5	ESC+B305
SB146	6	ECS+B306
SB147	7	ESC+B307

SB148	8	ESC+B308
SB149	9	ESC+B309
SB150	10	ESC+B310
SB151	11	ESC+B311
SB152	12	ESC+B312

JAN/EAN8

SB161	1	ESC+B401
SB162	2	ESC+B402
SB163	3	ESC+B403
SB164	4	ESC+B404
SB165	5	ESC+B405
SB166	6	ESC+B406
SB167	7	ESC+B407
SB168	8	ESC+B408
SB169	9	ESC+B409
SB170	10	ESC+B410
SB171	11	ESC+B411
SB172	12	ESC+B412

UPC-A

SB181	1	ESC+BH01
SB182	2	ESC+BH02
SB183	3	ESC+BH03
SB184	4	ESC+BH04
SB185	5	ESC+BH05
SB186	6	ESC+BH06
SB187	7	ESC+BH07
SB188	8	ESC+BH08
SB189	9	ESC+BH09
SB190	10	ESC+BH10
SB191	11	ESC+BH11
SB192	12	ESC+BH12

PostNet

SB007		ESC+BP

Barcode (Ratio 1:2)

NW-7 (CODABAR)

SAP Print Control	Narrow Bar Width	Mapped to SBPL Command
SB201	1	ESC+D001
SB202	2	ESC+D002
SB203	3	ESC+D003
SB204	4	ESC+D004
SB205	5	ESC+D005
SB206	6	ESC+D006
SB207	7	ESC+D007
SB208	8	ESC+D008
SB209	9	ESC+D009
SB210	10	ESC+D010
SB211	11	ESC+D011
SB212	12	ESC+D012

Interleaved 2 of 5

SB221	1	ESC+D201
SB222	2	ESC+D202
SB223	3	ESC+D203
SB224	4	ESC+D204
SB225	5	ESC+D205
SB226	6	ESC+D206
SB227	7	ESC+D207
SB228	8	ESC+D208
SB229	9	ESC+D209
SB230	10	ESC+D210
SB231	11	ESC+D211
SB232	12	ESC+D212

JAN/EAN13

SB241	1	ESC+D301
SB242	2	ESC+D302
SB243	3	ESC+D303
SB244	4	ESC+D304
SB245	5	ESC+D305
SB246	6	ESC+D306
SB247	7	ESC+D307
SB248	8	ESC+D308
SB249	9	ESC+D309
SB250	10	ESC+D310
SB251	11	ESC+D311
SB252	12	ESC+D312

JAN/EAN8

SB261	1	ESC+D401
SB262	2	ESC+D402
SB263	3	ESC+D403
SB264	4	ESC+D404
SB265	5	ESC+D405
SB266	6	ESC+D406
SB267	7	ESC+D407
SB268	8	ESC+D408
SB269	9	ESC+D409
SB270	10	ESC+D410
SB271	11	ESC+D411
SB272	12	ESC+D412

UPC-A

SB281	1	ESC+DH01
SB282	2	ESC+DH02
SB283	3	ESC+DH03
SB284	4	ESC+DH04
SB285	5	ESC+DH05
SB286	6	ESC+DH06
SB287	7	ESC+DH07
SB288	8	ESC+DH08
SB289	9	ESC+DH09
SB290	10	ESC+DH10
SB291	11	ESC+DH11
SB292	12	ESC+DH12

Barcode (Ratio 2:5)

NW-7 (CODABAR)

SAP Print Control	Narrow Bar Width	Mapped to SBPL Command
SB301	1	ESC+BD001
SB302	2	ESC+BD002
SB303	3	ESC+BD003
SB304	4	ESC+BD004
SB305	5	ESC+BD005
SB306	6	ESC+BD006
SB307	7	ESC+BD007
SB308	8	ESC+BD008
SB309	9	ESC+BD009
SB310	10	ESC+BD010
SB311	11	ESC+BD011
SB312	12	ESC+BD012

Interleaved 2 of 5

SB321	1	ESC+BD201
SB322	2	ESC+BD202
SB323	3	ESC+BD203
SB324	4	ESC+BD204
SB325	5	ESC+BD205
SB326	6	ESC+BD206
SB327	7	ESC+BD207
SB328	8	ESC+BD208
SB329	9	ESC+BD209
SB330	10	ESC+BD210
SB331	11	ESC+BD211
SB332	12	ESC+BD212

JAN/EAN13

SB341	1	ESC+BD301
SB342	2	ESC+BD302
SB343	3	ESC+BD303
SB344	4	ESC+BD304
SB345	5	ESC+BD305
SB346	6	ESC+BD306
SB347	7	ESC+BD307
SB348	8	ESC+BD308
SB349	9	ESC+BD309
SB350	10	ESC+BD310
SB351	11	ESC+BD311
SB352	12	ESC+BD312

JAN/EAN8

SB361	1	ESC+BD401
SB362	2	ESC+BD402
SB363	3	ESC+BD403
SB364	4	ESC+BD404
SB365	5	ESC+BD405
SB366	6	ESC+BD406
SB367	7	ESC+BD407
SB368	8	ESC+BD408
SB369	9	ESC+BD409

SB370	10	ESC+BD410
SB371	11	ESC+BD411
SB372	12	ESC+BD412

UPC-A

SB381	1	ESC+BDH01
SB382	2	ESC+BDH02
SB383	3	ESC+BDH03
SB384	4	ESC+BDH04
SB385	5	ESC+BDH05
SB386	6	ESC+BDH06
SB387	7	ESC+BDH07
SB388	8	ESC+BDH08
SB389	9	ESC+BDH09
SB390	10	ESC+BDH10
SB391	11	ESC+DBH11
SB392	12	ESC+BDH12

Code 39 (Ratio 1:3)

SB501	1	ESC+B101
SB502	2	ESC+B102
SB503	3	ESC+B103
SB504	4	ESC+B104
SB505	5	ESC+B105
SB506	6	ESC+B106
SB507	7	ESC+B107
SB508	8	ESC+B108
SB509	9	ESC+B109
SB510	10	ESC+B110
SB511	11	ESC+B111
SB512	12	ESC+B112

Code 39 (Ratio 1:2)

SB521	1	ESC+D101
SB522	2	ESC+D102
SB523	3	ESC+D103
SB524	4	ESC+D104
SB525	5	ESC+D105
SB526	6	ESC+D106
SB527	7	ESC+D107
SB528	8	ESC+D108
SB529	9	ESC+D109
SB530	10	ESC+D110
SB531	11	ESC+D111
SB532	12	ESC+D112

Code 39 (Ratio 2:5)

SB541	1	ESC+BD101
SB542	2	ESC+BD102
SB543	3	ESC+BD103
SB544	4	ESC+BD104
SB545	5	ESC+BD105
SB546	6	ESC+BD106
SB547	7	ESC+BD107
SB548	8	ESC+BD108
SB549	9	ESC+BD109

SB550	10	ESC+BD110
SB551	11	ESC+BD111
SB552	12	ESC+BD112

Code 93		
SB561	1	ESC+BC01
SB562	2	ESC+BC02
SB563	3	ESC+BC03
SB564	4	ESC+BC04
SB565	5	ESC+BC05
SB566	6	ESC+BC06
SB567	7	ESC+BC07
SB568	8	ESC+BC08
SB569	9	ESC+BC09
SB570	10	ESC+BC10
SB571	11	ESC+BC11
SB572	12	ESC+BC12

8.2 Font Print Controls

		203dpi	305dpi	609dpi	
ESC+M	**ESC+L**	Point			Print Control
(13x20)	1	7	5	2	SF301
(Courcyr)	2	14	9	5	SF302
	3	21	14	7	SF303
	4	28	19	10	SF304
	5	36	24	12	SF305
	6	43	28	14	SF306
	7	50	33	17	SF307
	8	57	38	19	SF308
	9	64	43	21	SF309
	10	71	47	24	SF310
	11	78	52	26	SF311
	12	85	57	28	SF312
ESC+S	1	5	4	2	SF201
(8x15)	2	11	7	4	SF202
(Lnprint)	3	16	11	5	SF203
	4	21	14	7	SF204
	5	27	18	9	SF205
	6	32	21	11	SF206
	7	37	25	12	SF207
	8	43	28	14	SF208
	9	48	32	16	SF209
	10	53	35	18	SF210
	11	59	39	20	SF211
	12	64	43	21	SF212
ESC+XM	1	8.5	5.5		SF301
(24x24)	2	17.0	11.5		SF302
(Letgoth)	3	25.5	17.5		SF303
LM4	4	34.0	22.5		SF304
Device	5	42.5	28.5		SF305
Type	6	51.0	34.0		SF306
	7	59.5	39.5		SF307
	8	68.0	45.5		SF308
	9	76.5	51.0		SF309
	10	85.0	56.5		SF310
	11	93.5	62.5		SF311
	12		68		SF312
ESC+XS	1	6.0	4.0		SF201
(17x17)	2	12.0	8.0		SF202
(Lnprint)	3	18.0	12.0		SF203
LM4	4	24.0	16.0		SF204
Device	5	30.0	20.0		SF205
Type	6	36.0	24.0		SF206
	7	42.0	28.0		SF207
	8	48.0	32.0		SF208
	9	54.5	36.0		SF209
	10	60.5	40.0		SF210
	11	66.5	44.0		SF211

	12	72.5	48.0		SF212
ESC+XU	1	3.0	2.0		SF101
(5x9)	2	6.5	4.0		SF102
(Cour_i7)	3	9.5	6.5		SF103
LM4	4	13.0	8.5		SF104
Device	5	16.0	10.5		SF105
Type	6	19.0	12.5		SF106
	7	22.5	15.0		SF107
	8	25.5	17.0		SF108
	9	28.5	19.0		SF109
	10	32.0	21.0		SF110
	11	35.0	23.5		SF111
	12	38.5	25.5		SF112

Note: The fixed size resident fonts are only supported in English-only and LM4 Device Types.

Other font information can be found at 6.2 Fonts.