



# SII Print Class Library for Android™ Application Programmer's Guide

Rev.08

[Products]

SLP720RT Series

SLP721RT Series

Seiko Instruments Inc.

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## Introduction

This manual describes "SII Print Class Library for Android™" (hereinafter referred to as "SII print class library") provided by Seiko Instruments Inc. (hereinafter referred to as "SII").

### Target printers

The printers supported by SII print class library are listed below.

Printers	Interface
SLP720RT Series	USB
	TCP/IP
SLP721RT Series	Bluetooth
	USB
	TCP/IP

### Terms

The terms used in this manual are defined as below.

Terms	Description
Technical Reference	Technical Reference shown as follows: · SLP720RT SERIES THERMAL PRINTER TECHNICAL REFERENCE · SLP721RT SERIES THERMAL PRINTER TECHNICAL REFERENCE
User's Guide	User's Guide shown as follows: · SLP720RT SERIES Thermal Printer USER'S GUIDE · SLP721RT SERIES Thermal Printer USER'S GUIDE
Printer command	Command for controlling the printer described in "Technical Reference".

## Supported Paper and Names in This Manual

The supported paper by the SII print class library and their names in this manual are listed below.

All Type	By type	By function	Abbreviation	Support
Paper	Receipt	Receipt	Receipt	✓
	Linerless label	Linerless label	Label	✓
		Marked linerless label	Marked paper	✓
	SLP Label	SLP Label	Label	✓

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# Chapter 1

## Product Overview

This chapter describes the product overview of SII print class library.

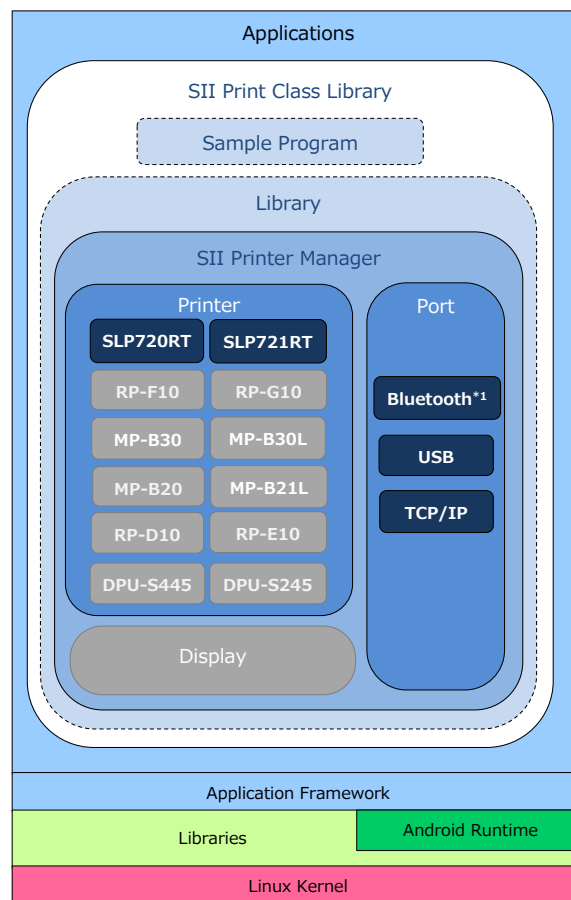
### 1.1 Functions Provided by SII Print Class Library

The SII print class library including the library and the sample program provides the functions to use SII printer SLP720RT/SLP721RT series (hereinafter referred to as "printer") in Android applications. Moreover, the SII print class library provides the library sample program in Android Studio project.

### 1.2 SII Print Class Library Overview

#### 1.2.1 SII Print Class Library Configuration

The library and sample program in the SII print class library are indicated with dashed lines in the figure below.



\*1: Supported only by SLP721RT.

### 1.2.2 Functions Provided by Library

By using the library, Android applications can easily send print data and printer commands to a printer through communication port (Bluetooth, USB, or TCP/IP) on an Android device. Also, the applications can get the printer status.

The library provides the following functions:

- Connecting to / disconnecting from a printer
- Sending data to a printer (print data and/or printer commands<sup>\*1</sup>)
- Printing barcode and 2-dimensional barcode
- Sending a data file to a printer (print data and/or printer commands<sup>\*1</sup>)
- Getting the printer status
- Aborting the waiting state of a printer
- Getting various responses from a printer
- Bulk registration of print commands
- Registering a printer status call back function
- Searching the printer by Bluetooth or TCP/IP
- Drawer operational control
- Buzzer sounding control
- Printing a label file
- Replacing object data in a label file
- Outputting a log file

<sup>\*1</sup>: Commands that read responses from the printer are not supported. In order to read responses from the printer, use `getStatus` or `getPrinterResponse`.

<b>(NOTE) SLP720RT/SLP721RT do not support the APIs of page mode, Display, or the barcode scanner.</b>
--

## Chapter 2

### Product Specifications

This chapter describes the product specifications of the library.

#### 2.1 Operating Environment

Operating environment for the library is shown in the following table.

Printer	Model		SLP721RT	SLP720RT/SLP721RT	
	Communication Interface		Bluetooth	USB	TCP/IP
Android Device	Communication Port		Bluetooth <sup>*1</sup>	USB <sup>*2</sup>	TCP/IP <sup>*3</sup>
	OS	Android 7.0 (API 24)	Supported	Supported	Supported
		Android 7.1 (API 25)			
		Android 8.0 (API 26)			
		Android 8.1 (API 27)			
		Android 9.0 (API 28)			
		Android 10.0 (API 29)			
		Android 11.0 (API 30)			
		Android 12.0 (API 31)			
		Android 12.1 (API 32)			
		Android 13.0 (API 33)			
		Android 14.0 (API 34)			
		Android 15.0 (API 35)			
		Android 16.0 (API 36)			
Supported Language			Japanese, English		

<sup>\*1</sup>: A Bluetooth connection needs to be established using SPP (Serial Port Profile).

<sup>\*2</sup>: Android device needs to support USB host function.

<sup>\*3</sup>: The wireless LAN access point that the Android device is connected and the printer need to be connected to the same network.

## 2.2 Printer Settings

Set the memory switches of the printer to [Value] in the following table when using the library.  
The memory switch of the printer can be set in the Android app "SII Printer Utility" on the Google Play.  
See "User's Guide" for details about the memory switches and the factory default settings.

MS	Function	Value
1-2	Taken Mode Selection (Taken Mode)	0 : Enable <sup>*1</sup> 1 : Disable <sup>*2</sup>
1-3	Mark Mode Selection (Mark Mode)	0 : Enable <sup>*3</sup> 1 : Disable <sup>*4</sup>
4-6	Paper Auto Detection Selection (Paper Auto Detection)	0 : Enable <sup>*3</sup> 1 : Disable <sup>*3*4</sup>
5-1	Automatic Status Response Selection (Auto Status Back)	0 : Enable
5-2	Initialized Response Selection (Init. Response)	0 : Enable
5-3	Data Discard Selection When Error Occurs (Error Through)	0 : Enable
5-4	Data Discard Selection When Output Buffer Full Occurs (Response Data Discarding)	1 : Disable
7	Thermal Paper Selection (Thermal Paper)	00B : Receipt 01B : Linerless label 10B : SLP Label
13-3	Realtime Command Selection (Realtime Command)	1 : Enable
17-3	Feed Backward Setting After Paper Cutting (Backfeed After Cut)	0 : Enable 1 : Disable <sup>*5</sup>

\*1: When printing continuously on linerless label, set this value to "Enable".

The status response of the taken sensor is responded when this value is set to "Enable".

\*2: When printing continuously on receipt or SLP Label, set this value to "Disable".

\*3: When using **feedPosition**, one of the following settings is necessary.

- To automatically detect paper, set the memory switch MS 4-6 (Paper Auto Detection Selection) of the printer to "Enable".

- To specify the paper, set MS 4-6 (Paper Auto Detection Selection) to "Disable" and set MS 1-3 (Mark Mode Selection) to "Enable".

In addition, select the paper to use as follows.

- For marked linerless label:

Set MS 7 (Thermal Paper Selection) to "Linerless label".

- For SLP Label:

Set MS 7 (Thermal Paper Selection) to "SLP Label".

\*4: Set this value to "Disable" and select the paper to be used in the memory switch MS 7 (Thermal Paper Selection) of the printer when using the receipt (other than marked paper) or the Linerless label (other than the marked paper).

\*5: When executing **cutPaper** under the following conditions and using **printSmartLabelImageData** immediately after, set this value to "Disable".

- MS1-3 (Mark Mode Selection) is set to "Disable".

- CUT\_FULL is specified to *cuttingMethod* of **cutPaper**, or MS1-2 (Taken Mode Selectoin) is set to "Enable" and CUT\_PARTIAL is specified to *cuttingMethod*.

## 2.3 Precautions

Communication ports cannot be shared with the printer driver and other libraries when using TCP/IP.

## Chapter 3

### How to Use Library

This chapter describes the development environment for Android application and how to use the library.

#### 3.1 Android Application Development Environment

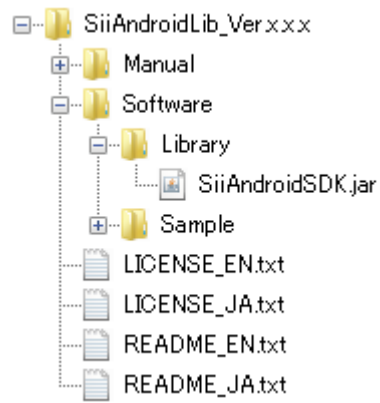
In order to develop Android applications, the following tools are required.  
See each of the following URLs for more details.

- Android Studio  
<https://developer.android.com/studio/index.html>
- USB driver for Windows (When developing in Windows environment)  
<https://developer.android.com/studio/run/oem-usb.html>

The description in and after this chapter is on the premise that the environment where each tool is available is prepared.

## 3.2 Provided Files

The file configuration of the SII print class library is as follows.



**Figure 3-1**

The file format of the library is JAR. The file name of the library is SiiAndroidSDK.jar.

### 3.3 Build Library into Android Studio Project

This section describes how to build the SII print class library into Android Studio project.

See "Chapter 5 Sample Program" for the sample program included in the SII print class library.

- (1) Create a project in Android Studio and copy the library file (SiiAndroidSDK.jar) to the [libs] folder. When the [libs] folder is not automatically created, add the folder manually. For sample programs included in the SII print class library, the folder is "\Sample\app\libs".
- (2) After adding the library, the view looks like Figure 3-2.

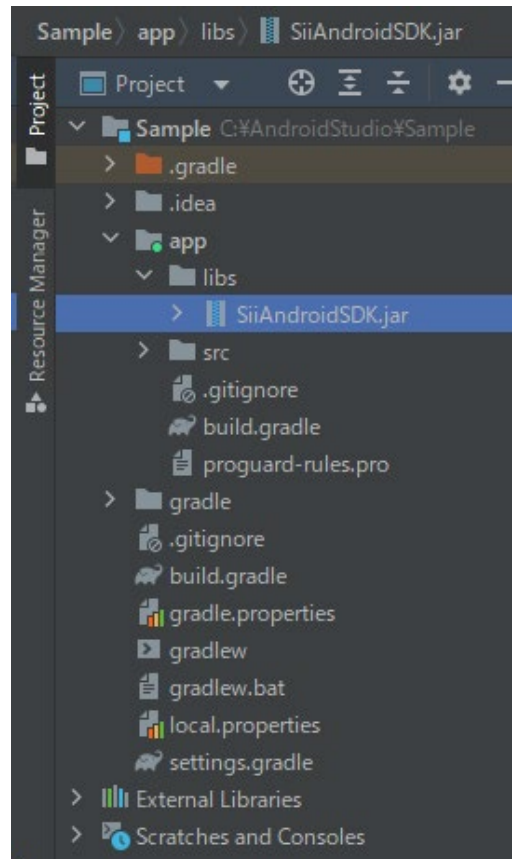


Figure 3-2

- (3) Add the following to dependencies{} of build.gradle(:app) in the application.

```
implementation 'com.journeyapps:zxing-android-embedded:3.4.0@aar'
implementation 'com.google.zxing:core:3.4.1'
implementation files ('libs/SiiAndroidSDK.jar')
```

- (4) Add the following to the beginning of the main source file.  
(Add to the beginning of MainActivity.java for the sample program.)

```
import com.seiko instruments.sdk.thermalprinter.PrinterManager;
import com.seiko instruments.sdk.thermalprinter.xxxx;
```



- (5) Add the following permission declaration to the application manifest (AndroidManifest.xml). Also, implement a process (requestPermissions()) that requests the appropriate permissions for the application.

[When using Bluetooth]

```
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>
<uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION"/>
<uses-permission android:name="android.permission.BLUETOOTH"/>
<uses-permission android:name="android.permission.BLUETOOTH_ADMIN"/>
<uses-permission android:name="android.permission.BLUETOOTH_CONNECT"/>
<uses-permission android:name="android.permission.BLUETOOTH_SCAN"/>
```

[When using TCP/IP]

```
<uses-permission android:name="android.permission.ACCESS_WIFI_STATE"/>
<uses-permission android:name="android.permission.CHANGE_WIFI_STATE"/>
<uses-permission android:name="android.permission.INTERNET"/>
```

By completing these procedures, the library function becomes available.

### 3.4 Use Developed Android Application on Android Device

In order to use the developed Android applications on the Android device, make the following settings on the Android device.

- (1) Select [Settings], [Developer options], and turn on [USB debugging]. (Figure 3-3)

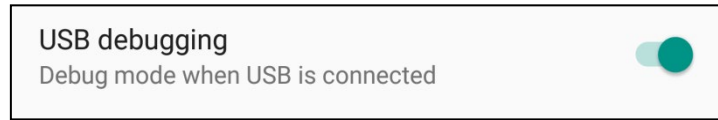


Figure 3-3

### 3.5 Precautions

- **About Scoped Storage**

"Scoped Storage" that is introduced in Android 10 distinguishes between app-specific storage and external storage.

When targeting Android 10 (API 29) or later, files that do not correspond to media files in the external storage cannot be handled directly. Files that do not correspond to media files can be handled by using the "Storage Access Framework".

See below for details of Scoped Storage.

- Data and file storage overview  
<https://developer.android.com/training/data-storage>

## Chapter 4

### Functions of Library

This chapter describes the APIs of each class implemented in the library.

#### 4.1 Printing Label Function

The label files (\*.sl, \*.slex) created using Smart Label Creator or SII Layout Editor can be printed using the library.

It also provides the function to replace text data, image data, or barcode data using the label file and print.

Smart Label Creator or SII Layout Editor is software that can create labels.

In this manual, when describing both Smart Label Creator and SII Layout Editor, they are referred to as the "app".

If an individual description is required, the name of the product will be provided.

The app can be downloaded from the following web page.

- SLP720RT/SLP721RT series download page  
<https://www.sii-ps.com/slp720rt/>

In addition, directed to the store directly depending on the app and the app can be installed.

#### iOS or Android

By scanning a QR code below with the smartphone, redirected to the store and the app can be installed.

- **iOS**



SII Layout Editor

- **Android**



SII Layout Editor

## Windows

SII Layout Editor

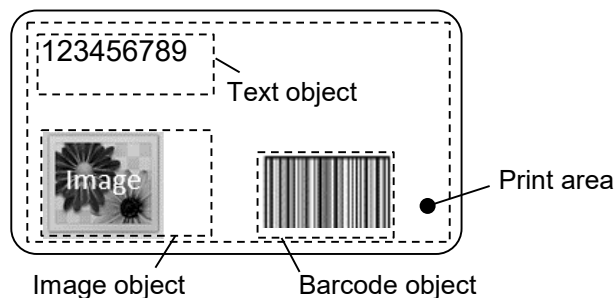
By clicking on the URL below or inputting it into a web browser to go to the store, the app can be installed.

<https://www.microsoft.com/store/apps/9P5G2R1PS76W>

Reference     · "SII Layout Editor" can also be searched and installed in App Store, Google Play, or Microsoft Store.

### 4.1.1 Structure of Label File

The label file is the file where objects are mapped within the print area for the label.



Example of label file (\*.sl, \*.slex)

#### (1) Types of objects and support in the library

Supported objects in the library are shown in the following table.

Object	Description	Label File (*.sl, *.slex) Source			Supported in Library
		SII Layout Editor		Smart Label Creator	
		iOS/Android	Windows	Windows	
Text object	Handle text data	✓	✓	✓	✓
Image object	Handle image data	✓	✓	✓	✓
Barcode object	Handle barcode data	✓	✓	✓	✓
Drawing (rectangle) object	Handle the drawn data of a figures (rectangle)	✓	✓	✓	✓
Drawing (circle/oval) object	Handle the drawn data of a figures (circle/oval)	✓	✓	✓	✓
Drawing (line) object	Handle the drawn data of a figures (line)	✓	✓	✓	✓
Frame object	Handle the drawn data of a decorative frame	–	–	✓	–
Contact object	Retrieve data from the device contact book	✓	–	–	✓
DateTime object	Handle the data of the date and time	✓	✓	✓	✓
Return Address object	Handle the data of the sender	–	–	✓	✓
Group object	Grouping multiple objects	–	–	✓	✓

## (2) Precautions for printing the label file using the library

Printing the label file using the app may differ from printing the label file using the library. Verify the performance with your actual device in advance.

Note the following when printing label files using the library.

### ① All object

- The drawing object mapped outside the print area is not supported.

### ② Text object

#### **App**

- The "Serialization" is not supported.
- When [Double Underline] is set for [Underline] in the text format, [Underline] is set in the library.
- If the font set using the app is not in the library, the text data is printed in the system standard font.

#### **Smart Label Creator**

- The "Zip code" is not supported.
- The "Field Link" is not supported.
- When [Double Line] is set for [Strikethrough] in the text format, [Line] is set in the library.
- It is not supported that the function to clear decorations or add different decorations or font sizes to the portions of text. The decorations and font size given to the 1st character are the decoration of the entire text.

### ③ Image object

#### **App**

- When the setting of dithering is set to "Burkes" or "Bayer", the "Floyd–Steinberg" is used in the library.

#### **Smart Label Creator**

- When the image source is "Link to File", the image object cannot be printed using the library.
- When the image source is "ClipArt", the image object cannot be printed using the library.
- The "Brightness" or "Contrast" is not supported.

### ④ Barcode object

#### **App**

- Among the barcodes supported by the app, the following barcodes are supported by the library.
  - CODE39
  - ITF
  - CODE128
  - UPC-A
  - EAN13
  - CODABAR
  - UPC-E
  - EAN8
  - PDF417
  - Data Matrix
  - QR Code

- The "Serialization" is not supported.
- The barcode setting shown in the following is not reflected.
  - Ratio of bar width
- The barcode image created using the app and the barcode image created by the library may not become the same barcode image.
- If the height of the barcode object is specified to be lower than the bar height using the app, the barcode will be reduced to fit within the object in the library and printed.
- When the security of the PDF417 is set to "-1" using the app, it is fixed to "0" in the library and the object is drawn.
- If the font set using the app is not in the library, the text data is printed in the system standard font.

### **Smart Label Creator**

- The "Field Link" is not supported.
- The barcode settings shown in the following are not reflected.
  - Mode of PDF417
  - Security of Data Matrix
  - Mode of QR Code
- When the mode of the Data Matrix is set to "1" (rectangle), the barcode is drawn in the middle of the object in the library.
- Regardless of the "horizontal alignment" setting in the format, HRI characters are always drawn centered horizontally in the library.

### ⑤ Drawing object

#### **App**

- When "Line Width" is too thin, dashed, long dashed, or double lines may be squished.
- The drawn position of the drawing object may differ between the app and the library.

### ⑥ Contact object

#### **App**

- If the font set using the app is not in the library, the text data is printed in the system standard font.

### ⑦ DateTime object

#### **App**

- If the font set using the app is not in the library, the text data is printed in the system standard font.

### ⑧ Group object

#### **Smart Label Creator**

- Grouped objects are ungrouped in the library.
- The drawn position of ungrouped objects may differ between Smart Label Creator and the library.

#### 4.1.2 Method for Using Label File

The printing method using the label file is described below.

- (1) Print the label file as it is from the library

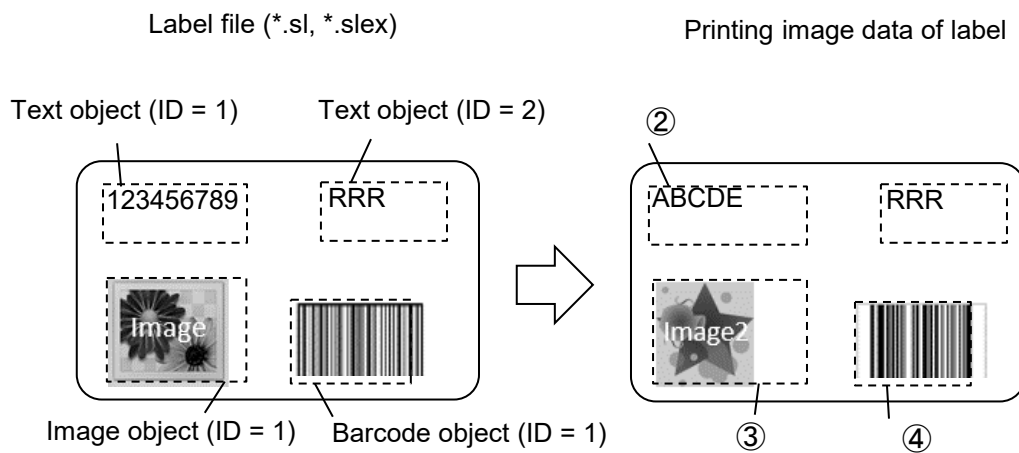
Print command example

- ① Specify label file
- ② Print label

- (2) Replace the object data in the label file and print

Print command example

- ① Specify label file
- ② Replace text data of label (text object ID = 1)
- ③ Replace image data of label (image object ID = 1)
- ④ Replace barcode data of label (barcode object ID = 1)
- ⑤ Print label



## 4.2 Log File Output Function

The logs can be retrieved and the log files can be output using the library.

### 4.2.1 How to Set Log Output

Log output settings can be configured by adding the config.ini file with the following content to the specific directory of the Android application that incorporates the library (e.g. internal shared storage \Android\data\<package name>\files).

```
config.ini  
  
LOGLEVEL=x  
LOGSIZEMAX=xMB  
LOGOUTPUT=x
```

Reference: See "4.2.2 Log Output Settings" for details on the settings for x.

### 4.2.2 Log Output Settings

Item	Description	Settings
LOGLEVEL	Log level	0 : Not record the log. 1 : Records an error log when <b>PrinterException</b> is thrown. 2 : Records API execution history.
LOGSIZEMAX	Log file maximum size	1MB : Log file maximum size is 1 MB 5MB : Log file maximum size is 5 MB 10MB : Log file maximum size is 10 MB 50MB : Log file maximum size is 50 MB
LOGOUTPUT	Logcat output enabled/disabled	0 : Logcat output is disabled 1 : Logcat output is enabled

### 4.2.3 Log File

Log files are saved as local files in the Android application that incorporates the library.

Log file name : PrinterManagerX.log (range of X is 0 to 4)

The 1st log file is created as PrinterManager0.log. If the log file maximum size is exceeded, changes the file name to PrinterManager1.log and creates a new PrinterManager0.log.

Up to 5 log files can be created.



## 4.3 API Reference

The package of the library is **com.seikoinstruments.sdk.thermalprinter**.  
**com.seikoinstruments.sdk.thermalprinter** includes the following classes.

Class Name	Description	Supported <sup>*1</sup>
<b>PrinterManager</b>	Provides the APIs used for communication with the printer and for printing. See " <b>4.3.1 PrinterManager Class</b> " for more details.	✓
<b>PrinterEvent</b>	Provides the API that gets the end event when <b>startDiscoveryPrinter</b> is terminated. See " <b>4.3.2 PrinterEvent Class</b> " for more details.	✓
<b>PrinterListener</b>	Interface for getting the end event when <b>startDiscoveryPrinter</b> is terminated. See " <b>4.3.3 PrinterListener Interface</b> " for more details.	✓
<b>PrinterInfo</b>	Stores the printer information found by <b>startDiscoveryPrinter</b> . See " <b>4.3.4 PrinterInfo Class</b> ".	✓
<b>PrinterIdentifier</b>	Stores the printer ID of the printer retrieved by <b>getPrinterResponse</b> . See " <b>4.3.5 PrinterIdentifier Class</b> ".	✓
<b>PrinterException</b>	Exception class that is thrown at API call. See " <b>4.3.6 PrinterException Class</b> " for more details.	✓
<b>CallbackFunctionListener</b>	Interface for getting the change event of printer status. See " <b>4.3.7 CallbackFunctionListener Interface</b> " for more details.	✓
<b>BarcodeScannerListener</b>	Interface for getting barcode scanner connection or barcode scanner disconnection, or received barcode data.	-
<b>SmartLabelManager</b>	Provides the API to specify label files or replace data. See " <b>4.3.9 SmartLabelManager Class</b> " for more details.	✓

\*1: ✓: Supported, -: Not supported

**(NOTE)** SLP720RT/SLP721RT do not support the APIs of page mode, Display, or the barcode scanner.

### 4.3.1 PrinterManager Class

#### (1) Method List

Methods provided by the **PrinterManager** class are shown in the following table.

Name	Description	Supported <sup>*1</sup>
<b>PrinterManager</b>	Constructor	✓
<b>connect</b>	Start communicating with printer (Bluetooth)	✓ <sup>*2</sup>
<b>connect</b>	Start communicating with printer (USB)	✓
<b>connect</b>	Start communicating with printer (TCP/IP)	✓
<b>disconnect</b>	Stop communicating with printer	✓
<b>setBarcodeScannerListener</b>	Start/End callback of barcode scanner	-
<b>sendText</b>	Send text data	✓
<b>sendTextEx</b>	Send format specified text data	✓
<b>printBarcode</b>	Print barcode	✓
<b>printPDF417</b>	Print PDF417	✓
<b>printQRcode</b>	Print QR Code	✓
<b>printDataMatrix</b>	Print Data Matrix	✓
<b>printMaxiCode</b>	Print MaxiCode	✓
<b>printGS1DataBarStacked</b>	Print GS1 Databar Stacked	✓
<b>printGS1DataBarStackedOmnidirectional</b>	Print GS1 Databar Stacked Omni-directional	✓
<b>printGS1DataBarExpandedStacked</b>	Print GS1 Databar Expanded Stacked	✓
<b>printAztecCode</b>	Print Aztec Code	-
<b>cutPaper</b>	Cut paper	✓
<b>feedPosition</b>	Paper form feed	✓
<b>openDrawer</b>	Open cash drawer	✓ <sup>*2</sup>
<b>buzzer</b>	Sound buzzer	-
<b>externalBuzzer</b>	Sound external buzzer	✓ <sup>*2</sup>
<b>sendBinary</b>	Send binary data	✓
<b>sendDataFile</b>	Send specified file	✓
<b>sendImage</b>	Send image	✓
<b>printPDF</b>	Print PDF page	✓
<b>getStatus</b>	Get printer status	✓
<b>setCallbackFunctionListener</b>	Start/End callback of printer status change	✓
<b>abort</b>	Abort waiting state of printer	✓
<b>registerLogo</b>	Register logo	✓
<b>printLogo</b>	Print logo	✓
<b>unregisterLogo</b>	Delete registered logo	✓
<b>registerStyleSheet</b>	Register style sheet	-
<b>unregisterStyleSheet</b>	Delete registered style sheet	-
<b>resetPrinter</b>	Reset printer	✓
<b>getPrinterResponse</b>	Get various responses from printer	✓
<b>startDiscoveryPrinter</b>	Start printer search (Bluetooth)	✓ <sup>*2</sup>

Name	Description	Supported *1
<b>startDiscoveryPrinter</b>	Start printer search (USB)	✓
<b>startDiscoveryPrinter</b>	Start printer search (TCP/IP)	✓
<b>cancelDiscoveryPrinter</b>	Cancel printer search	✓
<b>getFoundPrinter</b>	Get found printer information	✓
<b>getSendTimeout</b>	Get send timeout period	✓
<b>setSendTimeout</b>	Set send timeout period	✓
<b>getReceiveTimeout</b>	Get receive timeout period	✓
<b>setReceiveTimeout</b>	Set receive timeout period	✓
<b>getInternationalCharacter</b>	Get international character set	✓
<b>setInternationalCharacter</b>	Set international character set	✓
<b>getCodePage</b>	Get codepage	✓
<b>setCodePage</b>	Set codepage	✓
<b>getPrinterModel</b>	Get printer model	✓
<b>getPortType</b>	Get connecting port type	✓
<b>isConnect</b>	Verify connection state with printer	✓
<b>getSocketKeepingTime</b>	Get socket keeping time	✓
<b>setSocketKeepingTime</b>	Set socket keeping time	✓
<b>getPrintSmartLabelMode</b>	Get paper when printing label file	✓
<b>setPrintSmartLabelMode</b>	Set paper when printing label file	✓
<b>getVersion</b>	Get SDK version	✓
<b>printSmartLabelImageData</b>	Print label	✓
<b>controlTransaction</b>	Start/End batch processing	✓

\*1: ✓: Supported, -: Not supported

\*2: Supported only by SLP721RT.

## (2) Constant List

### ① Printer model

Constants used for starting communicating with a printer and getting the printer model are shown in the following table.

Constant Name	Description	Value
<b>PRINTER_MODEL_SLP720RT</b>	SLP720RT/SLP721RT	305
<b>PRINTER_MODEL_DEFAULT</b>	Default of printer model	284

## ② Response type

Constants used for getting various responses from a printer are shown in the following table.

Constant Name	Description	Value
<b>PRINTER_RESPONSE_REQUEST</b>	Request of execution response	0
<b>PRINTER_RESPONSE_USER_AREA</b>	Send remaining capacity of user area	1
<b>PRINTER_RESPONSE_ARRANGE_USER_AREA</b>	Send remaining capacity of user area after defragment	2
<b>PRINTER_RESPONSE_NV_GRAPHICS</b>	Send NV graphics memory capacity	3
<b>PRINTER_RESPONSE_KEY_CODE</b>	Send key code list of defined NV graphics	4
<b>PRINTER_RESPONSE_MAINTENANCE_COUNTER</b>	Send maintenance counter	7
<b>PRINTER_RESPONSE_PRINTER_IDENTIFIER</b>	Send printer ID	8

## ③ International character set

Constants used for setting/getting international character set are shown in the following table.

Constant Name	Description	Value
<b>COUNTRY_USA</b>	USA	0
<b>COUNTRY_FRANCE</b>	France	1
<b>COUNTRY_GERMANY</b>	Germany	2
<b>COUNTRY_ENGLAND</b>	United Kingdom	3
<b>COUNTRY_DENMARK_1</b>	Denmark I	4
<b>COUNTRY_SWEDEN</b>	Sweden	5
<b>COUNTRY_ITALY</b>	Italy	6
<b>COUNTRY_SPAIN</b>	Spain I	7
<b>COUNTRY_JAPAN</b>	Japan	8
<b>COUNTRY_NORWAY</b>	Norway	9
<b>COUNTRY_DENMARK_2</b>	Denmark II	10
<b>COUNTRY_SPAIN_2</b>	Spain II	11
<b>COUNTRY_LATIN_AMERICA</b>	Latin America	12
<b>COUNTRY_ARABIA</b>	Arabia	17

## ④ Codepage

Constants used for setting/getting codepage are shown in the following table.

Constant Name	Description	Value
<b>CODE_PAGE_437</b>	USA, Standard Europe (Code Page437)	0
<b>CODE_PAGE_KATAKANA</b>	Katakana	1

Constant Name	Description	Value
<b>CODE_PAGE_850</b>	Multilingual (Code Page850)	2
<b>CODE_PAGE_860</b>	Portuguese (Code Page860)	3
<b>CODE_PAGE_863</b>	Canadian-French (Code Page863)	4
<b>CODE_PAGE_865</b>	Nordic (Code Page865)	5
<b>CODE_PAGE_857</b>	Turkish (Code Page857)	13
<b>CODE_PAGE_737</b>	Greek (Code Page737)	14
<b>CODE_PAGE_1252</b>	Latin (Code Page1252)	16
<b>CODE_PAGE_866</b>	Russian (Code Page866)	17
<b>CODE_PAGE_852</b>	Eastern Europe (Code Page852)	18
<b>CODE_PAGE_858</b>	Euro (Code Page858)	19
<b>CODE_PAGE_855</b>	Cyrillic (Code Page855)	34
<b>CODE_PAGE_864<sup>*1*2</sup></b>	Arabic (Code Page864)	37
<b>CODE_PAGE_1250</b>	Central European (Code Page1250)	45
<b>CODE_PAGE_1251</b>	Cyrillic (Code Page1251)	46
<b>CODE_PAGE_1253</b>	Greek (Code Page1253)	47
<b>CODE_PAGE_1254</b>	Turkish (Code Page1254)	48

\*1: 20ACh of the Unicode cannot be printed.

\*2: Font B cannot be printed.

#### ⑤ Port type

Constants used for starting communicating with a printer and getting the connecting port type are shown in the following table.

Constant Name	Description	Value
<b>PRINTER_TYPE_BLUETOOTH<sup>*1</sup></b>	Bluetooth	0
<b>PRINTER_TYPE_USB</b>	USB	1
<b>PRINTER_TYPE_TCP</b>	TCP/IP	2

\*1: Supported only by SLP721RT.

#### ⑥ Paper selection with or without mark when printing label file

Constants used for selecting the paper when printing label file.

Constant Name	Description	Value
<b>PRINTSMARTLABEL_MODE_MARK</b>	Marked paper	0
<b>PRINTSMARTLABEL_MODE_NONEMARK</b>	Paper without mark	1

⑦ Barcode or PDF417

Constants used for printing barcode and printing PDF417 are shown in the following table.

Constant Name	Description	Value
<b>BARCODE_HEIGHT_DEFAULT</b>	Default of barcode height	162
<b>PDF417_MODULE_HEIGHT_DEFAULT</b>	Default of PDF417 height	10
<b>PDF417_ROW_AUTO</b>	Automatic selection of the number of rows	0
<b>PDF417_COLUMN_AUTO</b>	Automatic selection of the number of columns	0

(3) Enumerated Constant List

① Bold print (CharacterBold)

Constants of enumerated type used for bold print are shown in the following table.

Constant Name	Description
<b>BOLD_CANCEL</b>	Cancel bold print
<b>BOLD</b>	Specify bold print

② Underline (CharacterUnderline)

Constants of enumerated type used for underlining are shown in the following table.

Constant Name	Description
<b>UNDERLINE_CANCEL</b>	Cancel underline print
<b>UNDERLINE_1</b>	Specify 1-dot width underline print
<b>UNDERLINE_2</b>	Specify 2-dot width underline print

③ Reverse print (CharacterReverse)

Constants of enumerated type used for reverse print are shown in the following table.

Constant Name	Description
<b>REVERSE_CANCEL</b>	Cancel reverse print
<b>REVERSE</b>	Specify reverse print

④ Inversion print (CharacterInversion)

Constants of enumerated type used for inversion print are shown in the following table.  
Inversion print cannot be added to the text data before inserting a new line feed.

Constant Name	Description
INVERSION_CANCEL	Cancel inversion print
INVERSION	Specify inversion print

⑤ Character font (CharacterFont)

Constants of enumerated type used for character font are shown in the following table.

Constant Name	Description
FONT_A	Font A (24 × 12)
FONT_B	Font B (16 × 8)

⑥ Character scale (CharacterScale)

Constants of enumerated type used for character scale are shown in the following table.

Constant Name	Description
VERTICAL_1_HORIZONTAL_1	Height × 1 and width × 1
VERTICAL_1_HORIZONTAL_2	Height × 1 and width × 2
VERTICAL_1_HORIZONTAL_3	Height × 1 and width × 3
VERTICAL_1_HORIZONTAL_4	Height × 1 and width × 4
VERTICAL_2_HORIZONTAL_1	Height × 2 and width × 1
VERTICAL_2_HORIZONTAL_2	Height × 2 and width × 2
VERTICAL_2_HORIZONTAL_3	Height × 2 and width × 3
VERTICAL_2_HORIZONTAL_4	Height × 2 and width × 4
VERTICAL_2_HORIZONTAL_6	Height × 2 and width × 6
VERTICAL_3_HORIZONTAL_1	Height × 3 and width × 1
VERTICAL_3_HORIZONTAL_2	Height × 3 and width × 2
VERTICAL_3_HORIZONTAL_3	Height × 3 and width × 3
VERTICAL_3_HORIZONTAL_4	Height × 3 and width × 4
VERTICAL_4_HORIZONTAL_1	Height × 4 and width × 1
VERTICAL_4_HORIZONTAL_2	Height × 4 and width × 2
VERTICAL_4_HORIZONTAL_3	Height × 4 and width × 3
VERTICAL_4_HORIZONTAL_4	Height × 4 and width × 4
VERTICAL_4_HORIZONTAL_6	Height × 4 and width × 6
VERTICAL_4_HORIZONTAL_8	Height × 4 and width × 8
VERTICAL_6_HORIZONTAL_2	Height × 6 and width × 2
VERTICAL_6_HORIZONTAL_4	Height × 6 and width × 4

Constant Name	Description
VERTICAL_6_HORIZONTAL_6	Height × 6 and width × 6
VERTICAL_6_HORIZONTAL_8	Height × 6 and width × 8
VERTICAL_8_HORIZONTAL_4	Height × 8 and width × 4
VERTICAL_8_HORIZONTAL_6	Height × 8 and width × 6
VERTICAL_8_HORIZONTAL_8	Height × 8 and width × 8

⑦ Alignment (PrintAlignment)

Constants of enumerated type used for alignment are shown in the following table.  
Alignment cannot be added to the text data before inserting a new line feed.

Constant Name	Description
ALIGNMENT_LEFT	Aligned left
ALIGNMENT_CENTER	Centered
ALIGNMENT_RIGHT	Aligned right

⑧ Pending data output specifying (OutputPendingData)

Constants of enumerated type used for pending data output specifying are shown in the following table.

Constant Name	Description
PENDING_DATA_OUTPUT_FIRST	Output pending data at first and start the processing
PENDING_DATA_OUTPUT_TOGETHER	Output pending data at the same time as the processing

⑨ Barcode symbol (BarcodeSymbol)

Constants of enumerated type used for barcode symbol are shown in the following table.

Constant Name	Description	Syntax*1
BARCODE_SYMBOL_UPC_A	UPC-A	(a)
BARCODE_SYMBOL_UPC_E	UPC-E	(a)
BARCODE_SYMBOL_EAN13	EAN13	(a)
BARCODE_SYMBOL_JAN13	JAN13	(a)
BARCODE_SYMBOL_EAN8	EAN8	(a)
BARCODE_SYMBOL_JAN8	JAN8	(a)
BARCODE_SYMBOL_CODE39	CODE39	(a), (b)
BARCODE_SYMBOL_CODE93	CODE93	(c)
BARCODE_SYMBOL_CODE128	CODE128	(c)
BARCODE_SYMBOL_ITF	ITF	(a), (b)



Constant Name	Description	Syntax <sup>*1</sup>
<b>BARCODE_SYMBOL_CODABAR</b>	CODABAR	(a), (b)
<b>BARCODE_SYMBOL_EAN13_ADDON</b>	EAN13 add-on	(a)
<b>BARCODE_SYMBOL_JAN13_ADDON</b>	JAN13 add-on	(a)
<b>BARCODE_SYMBOL_GS1_OMNI_DIRECTIONAL</b>	GS1 Databar Omni-directional	(a)
<b>BARCODE_SYMBOL_GS1_TRUNCATED</b>	GS1 Databar Truncated	(a)
<b>BARCODE_SYMBOL_GS1_LIMITED</b>	GS1 Databar Limited	(a)
<b>BARCODE_SYMBOL_GS1_EXPANDED</b>	GS1 Databar Expanded	(a)

\*1: See `printBarcode` for details of syntax.

⑩ Module size (ModuleSize)

Constants of enumerated type used for width, nominal fine element width, and module size of barcode are shown in the following table.

Constant Name	Description	Method to Use
<b>BARCODE_MODULE_WIDTH_2</b>	Fine element 2 dots Module width 0.250 mm	<b>printBarcode</b>
<b>BARCODE_MODULE_WIDTH_3</b>	Fine element 3 dots Module width 0.375 mm	
<b>BARCODE_MODULE_WIDTH_4</b>	Fine element 4 dots Module width 0.500 mm	
<b>BARCODE_MODULE_WIDTH_5</b>	Fine element 5 dots Module width 0.625 mm	
<b>BARCODE_MODULE_WIDTH_6</b>	Fine element 6 dots Module width 0.750 mm	
<b>PDF417_MODULE_WIDTH_2</b>	Nominal fine element width 2 dots	<b>printPDF417</b>
<b>PDF417_MODULE_WIDTH_3</b>	Nominal fine element width 3 dots	
<b>PDF417_MODULE_WIDTH_4</b>	Nominal fine element width 4 dots	
<b>PDF417_MODULE_WIDTH_5</b>	Nominal fine element width 5 dots	
<b>PDF417_MODULE_WIDTH_6</b>	Nominal fine element width 6 dots	
<b>PDF417_MODULE_WIDTH_7</b>	Nominal fine element width 7 dots	
<b>PDF417_MODULE_WIDTH_8</b>	Nominal fine element width 8 dots	

Constant Name	Description	Method to Use
QR_MODULE_SIZE_2	2 dots	printQRcode
QR_MODULE_SIZE_3	3 dots	
QR_MODULE_SIZE_4	4 dots	
QR_MODULE_SIZE_5	5 dots	
QR_MODULE_SIZE_6	6 dots	
QR_MODULE_SIZE_7	7 dots	
QR_MODULE_SIZE_8	8 dots	
QR_MODULE_SIZE_9	9 dots	
QR_MODULE_SIZE_10	10 dots	
QR_MODULE_SIZE_11	11 dots	
QR_MODULE_SIZE_12	12 dots	
QR_MODULE_SIZE_13	13 dots	
QR_MODULE_SIZE_14	14 dots	
QR_MODULE_SIZE_15	15 dots	
QR_MODULE_SIZE_16	16 dots	
DATAMATRIX_MODULE_SIZE_2	2 dots	printDataMatrix
DATAMATRIX_MODULE_SIZE_3	3 dots	
DATAMATRIX_MODULE_SIZE_4	4 dots	
DATAMATRIX_MODULE_SIZE_5	5 dots	
DATAMATRIX_MODULE_SIZE_6	6 dots	
DATAMATRIX_MODULE_SIZE_7	7 dots	
DATAMATRIX_MODULE_SIZE_8	8 dots	
DATAMATRIX_MODULE_SIZE_9	9 dots	
DATAMATRIX_MODULE_SIZE_10	10 dots	
DATAMATRIX_MODULE_SIZE_11	11 dots	
DATAMATRIX_MODULE_SIZE_12	12 dots	
DATAMATRIX_MODULE_SIZE_13	13 dots	
DATAMATRIX_MODULE_SIZE_14	14 dots	
DATAMATRIX_MODULE_SIZE_15	15 dots	
DATAMATRIX_MODULE_SIZE_16	16 dots	

Constant Name	Description	Method to Use
GS1DATABAR_MODULE_SIZE_2	2 dots	<ul style="list-style-type: none"> <li>● <code>printGS1DataBarStacked</code></li> <li>● <code>printGS1DataBarStackedOmnidirectional</code></li> <li>● <code>printGS1DataBarExpandedStacked</code></li> </ul>
GS1DATABAR_MODULE_SIZE_3	3 dots	
GS1DATABAR_MODULE_SIZE_4	4 dots	
GS1DATABAR_MODULE_SIZE_5	5 dots	
GS1DATABAR_MODULE_SIZE_6	6 dots	
GS1DATABAR_MODULE_SIZE_7	7 dots	
GS1DATABAR_MODULE_SIZE_8	8 dots	
GS1DATABAR_MODULE_SIZE_9	9 dots	
GS1DATABAR_MODULE_SIZE_10	10 dots	
GS1DATABAR_MODULE_SIZE_11	11 dots	
GS1DATABAR_MODULE_SIZE_12	12 dots	
GS1DATABAR_MODULE_SIZE_13	13 dots	
GS1DATABAR_MODULE_SIZE_14	14 dots	
GS1DATABAR_MODULE_SIZE_15	15 dots	
GS1DATABAR_MODULE_SIZE_16	16 dots	

⑪ HRI character print position (HriPosition)

Constants of enumerated type used for HRI character print position are shown in the following table.

Constant Name	Description
HRI_NONE	Not printed
HRI_POSITION_ABOVE	Above barcode
HRI_POSITION_BELOW	Below barcode
HRI_POSITION_ABOVE_BELOW	Above and below barcode (both)

⑫ N:W ratio (NwRatio)

Constants of enumerated type used for N:W ratio are shown in the following table.

Constant Name	Description
NWRATIO_1TO2	1:2
NWRATIO_1TO2_5	1:2.5
NWRATIO_1TO3	1:3

⑬ Error correction level (ErrorCorrection)

Constants of enumerated type used for error correction level are shown in the following table.

Constant Name	Description	Method to Use
PDF417_ERROR_CORRECTION_0	Error correction level 0	printPDF417
PDF417_ERROR_CORRECTION_1	Error correction level 1	
PDF417_ERROR_CORRECTION_2	Error correction level 2	
PDF417_ERROR_CORRECTION_3	Error correction level 3	
PDF417_ERROR_CORRECTION_4	Error correction level 4	
PDF417_ERROR_CORRECTION_5	Error correction level 5	
PDF417_ERROR_CORRECTION_6	Error correction level 6	
PDF417_ERROR_CORRECTION_7	Error correction level 7	
PDF417_ERROR_CORRECTION_8	Error correction level 8	
QR_ERROR_CORRECTION_L	Error correction level L	printQRcode
QR_ERROR_CORRECTION_M	Error correction level M	
QR_ERROR_CORRECTION_H	Error correction level H	
QR_ERROR_CORRECTION_Q	Error correction level Q	

⑭ PDF417 symbol (Pdf417Symbol)

Constants of enumerated type used for PDF417 symbol are shown in the following table.

Constant Name	Description
PDF417_STANDARD	PDF417
PDF417_COMPACT	Compact PDF417

⑮ QR Code Model (QrModel)

Constants of enumerated type used for QR Code Model are shown in the following table.

Constant Name	Description
QR_MODEL_2	QR Code Model 2

⑯ Data Matrix module (DataMatrixModule)

Constants of enumerated type used for Data Matrix module are shown in the following table.

Constant Name	Description
DATA_MATRIX_AUTO	Number of modules: Automatic
DATA_MATRIX_10_10	Number of modules: 10 × 10
DATA_MATRIX_12_12	Number of modules: 12 × 12
DATA_MATRIX_14_14	Number of modules: 14 × 14

Constant Name	Description
DATA_MATRIX_16_16	Number of modules: 16 × 16
DATA_MATRIX_18_18	Number of modules: 18 × 18
DATA_MATRIX_20_20	Number of modules: 20 × 20
DATA_MATRIX_22_22	Number of modules: 22 × 22
DATA_MATRIX_24_24	Number of modules: 24 × 24
DATA_MATRIX_26_26	Number of modules: 26 × 26
DATA_MATRIX_32_32	Number of modules: 32 × 32
DATA_MATRIX_36_36	Number of modules: 36 × 36
DATA_MATRIX_40_40	Number of modules: 40 × 40
DATA_MATRIX_44_44	Number of modules: 44 × 44
DATA_MATRIX_48_48	Number of modules: 48 × 48
DATA_MATRIX_52_52	Number of modules: 52 × 52
DATA_MATRIX_64_64	Number of modules: 64 × 64
DATA_MATRIX_72_72	Number of modules: 72 × 72
DATA_MATRIX_80_80	Number of modules: 80 × 80
DATA_MATRIX_88_88	Number of modules: 88 × 88
DATA_MATRIX_96_96	Number of modules: 96 × 96
DATA_MATRIX_104_104	Number of modules: 104 × 104
DATA_MATRIX_120_120	Number of modules: 120 × 120
DATA_MATRIX_132_132	Number of modules: 132 × 132
DATA_MATRIX_144_144	Number of modules: 144 × 144
DATA_MATRIX_8_18	Number of modules: 8 × 18
DATA_MATRIX_8_32	Number of modules: 8 × 32
DATA_MATRIX_12_26	Number of modules: 12 × 26
DATA_MATRIX_12_36	Number of modules: 12 × 36
DATA_MATRIX_16_36	Number of modules: 16 × 36
DATA_MATRIX_16_48	Number of modules: 16 × 48

⑰ MaxiCode Mode (MaxiCodeMode)

Constants of enumerated type used for MaxiCode Mode are shown in the following table.

Constant Name	Description
MAXI_CODE_2	Mode2
MAXI_CODE_3	Mode3
MAXI_CODE_4	Mode4
MAXI_CODE_5	Mode5

⑱ Cutting method (CuttingMethod)

Constants of enumerated type used for the cutting method are shown in the following table.

Constant Name	Description	
	Paper Feed to Cut Position	Cutting Method
CUT_FULL	Enabled	Full cut
CUT_FULL_NO_FEED	Disabled	
CUT_PARTIAL	Enabled	Partial cut
CUT_PARTIAL_NO_FEED	Disabled	

⑲ Form feed position (FeedPosition)

Constants of enumerated type used for the form feed position of marked paper or label are shown in the following table.

Constant Name	Description
FEED_CUTTER	After detecting the mark, feeds the paper to the cut position. The paper feed length is the length of the memory switches MS 8 to 9 (Mark Detection Cut Position Correction) of the printer. The default of the paper feed length is 58 dots (7.25 mm).

⑳ Drawer number (DrawerNum)

Constants of enumerated type used for drawer number are shown in the following table.

Constant Name	Description
DRAWER_1	Drawer 1
DRAWER_2	Drawer 2

㉑ Pulse width (PulseWidth)

Constants of enumerated type used for the pulse width are shown in the following table.

Constant Name	Description
ON_OFF_TIME_100	ON/OFF time 100 milliseconds
ON_OFF_TIME_200	ON/OFF time 200 milliseconds
ON_OFF_TIME_300	ON/OFF time 300 milliseconds
ON_OFF_TIME_400	ON/OFF time 400 milliseconds
ON_OFF_TIME_500	ON/OFF time 500 milliseconds
ON_OFF_TIME_600	ON/OFF time 600 milliseconds

Constant Name	Description
<b>ON_OFF_TIME_700</b>	ON/OFF time 700 milliseconds
<b>ON_OFF_TIME_800</b>	ON/OFF time 800 milliseconds

②② Buzzer pattern (BuzzerPattern)

Constants of enumerated type used for the buzzer pattern of the external buzzer are shown in the following table.

Constant Name	Description
<b>BUZZER_PATTERN_1</b>	Pattern 1
<b>BUZZER_PATTERN_2</b>	Pattern 2
<b>BUZZER_PATTERN_3</b>	Pattern 3
<b>BUZZER_PATTERN_4</b>	Pattern 4

②③ Dithering (Dithering)

Constants of enumerated type used for dithering are shown in the following table.

Constant Name	Description
<b>DITHERING_DISABLE</b>	Dithering is disabled.
<b>DITHERING_ERRORDIFFUSION</b>	Dithering is enabled.

②④ Image rotation direction (Rotate)

Constants of enumerated type used for image rotation direction are shown in the following table.

Constant Name	Description
<b>ROTATE_NONE</b>	No rotation
<b>ROTATE_180</b>	Rotate 180 degrees

②⑤ Image scaling (ImageScale)

Constants of enumerated type used for image scaling are shown in the following table.

Constant Name	Description
<b>IMAGE_SCALE_NONE</b>	No scaling
<b>IMAGE_SCALE_WIDTH_FIT</b>	Scale to fit print width

②⑥ Batch processing selection (TransactionFunction)

Constants of enumerated type used for batch processing selection are shown in the following table.

Constant Name	Description
TRANSACTION_CLEAR	Cancel batch processing
TRANSACTION_START	Start batch processing
TRANSACTION_PRINT	Finish batch printing and batch processing



#### (4) Method Details

### PrinterManager

### Constructor

Constructor for **com.seikoinstruments.sdk.thermalprinter.PrinterManager** class.

Syntax      `public PrinterManager(Context context)`

Parameter    *context*                      Specify application context to call this method.  
Example: **MainActivity.this**

### connect

### Start communicating with printer (Bluetooth)

Starts communication with a printer by Bluetooth connection.

Supported only by SLP721RT.

The method of syntax (a) always communicates with a printer in secure mode.

The method of syntax (b) communicates with a printer by specifying secure mode or insecure mode.

Syntax      (a) `public void connect(int printerModel, String address)` throws **PrinterException**

(b) `public void connect(int printerModel, String address, boolean secure)` throws **PrinterException**

Parameter    *printerModel*                      Printer model constant for Bluetooth connection  
See "4.3.1(2)① Printer model" for available constants.

*address*                                  Bluetooth address  
Example: "00:11:22:AA:BB:CC"

*secure*                                  true      Communicates with a printer in secure mode  
false      Communicates with a printer in insecure mode  
Normally, communication in secure mode is recommended.

Exception    **PrinterException**  
**PrinterException** is thrown when an error occurs while this method is being called.  
See "**4.3.6 PrinterException Class**" for details of the error.

Description    Call this method before using other **Printer Manager** class methods.

The printer specified by *printerModel* is connected to the Bluetooth address specified by *address*.

Also, printer initial setting is performed at the connection based on *printerModel* specified.

Monitoring of the printer status is started with this method. The latest printer status can be retrieved from **getStatus**.

Changes of the printer status can be notified as events by **onStatusChanged** and **setCallbackFunctionListener**.

### connect

### Start communicating with printer (USB)

Starts communication with a printer by USB connection.

Syntax      `public void connect(int printerModel)` throws **PrinterException**

Parameter    *printerModel*                      Printer model constant for USB connection  
See "4.3.1(2)① Printer model" for available constants.

Exception    **PrinterException**  
**PrinterException** is thrown when an error occurs while this method is being called.  
See "**4.3.6 PrinterException Class**" for details of the error.

**Description** Call this method before using other **PrinterManager** class methods.

The printer specified by *printerModel* is connected.

Also, printer initial setting is performed at the connection based on *printerModel* specified.

Monitoring of the printer status is started with this method. The latest printer status can be retrieved from **getStatus**.

Changes of the printer status can be notified as events by **onStatusChanged** and **setCallbackFunctionListener**.

## connect

## Start communicating with printer (TCP/IP)

Starts communication with a printer by TCP/IP connection.

**Syntax**      `public void connect(int printerModel, String address) throws PrinterException`

**Parameter**    *printerModel*      Printer model constant for Ethernet connection  
See "4.3.1(2)① Printer model" for available constants.

*address*              IP address  
Example: "192.168.0.190"

**Exception**    **PrinterException**  
**PrinterException** is thrown when an error occurs while this method is being called.  
See "**4.3.6 PrinterException Class**" for details of the error.

**Description** Call this method before using other **PrinterManager** class methods.

Starts communication with a printer connected to the same network as the Android device by TCP/IP connection.

Connects to the IP address specified by *address*. TCP ports 9100 and 26100 are used for communication. Also, printer initial setting is performed at the connection based on *printerModel* specified.

### • Creating/discarding of socket in TCP/IP connection of the library

After **connect**, the library retains the created socket until **disconnect**.  
And connecting to the same printer from other applications is not possible until **disconnect**.

Based on the completion of data transmission to the printer, the socket is once discarded after elapsing socket keeping time set by **setSocketKeepingTime**. Then the new socket is created immediately and used for the next connection.

Monitoring of the printer status is started with this method. The latest printer status can be retrieved from **getStatus**.

Changes of the printer status can be notified as events by **onStatusChanged** and **setCallbackFunctionListener**.

## disconnect

## Stop communicating with printer

Stops communicating with the printer and monitoring the printer status.

**Syntax**      `public void disconnect() throws PrinterException`

**Exception**    **PrinterException**  
**PrinterException** is thrown when an error occurs while this method is being called.  
See "**4.3.6 PrinterException Class**" for details of the error.

- Description** This method discards the print data kept by **controlTransaction**.  
The instance of **CallbackFunctionListener** interface kept by **setCallbackFunctionListener** is discarded and the callback is stopped.
- Note** It is recommended to get the execution response by **PRINTER\_RESPONSE\_REQUEST** of **getPrinterResponse** before executing this method. If not, the communication is disconnected by this method before the print data sending from Android device to the printer is completed, and a part of the data may be lost.  
If you do not execute **getPrinterResponse** in your program, evaluate your program to confirm no problems arise.

## setBarcodeScannerListener Start/End callback of barcode scanner

This method is not supported. When this method is executed, **PrinterException** is thrown.

**Syntax**      `public void setBarcodeScannerListener(BarcodeScannerListener listener)` throws **PrinterException**

## sendText Send text data

Sends text data.

**Syntax**      `public void sendText(String text)` throws **PrinterException**

**Parameter**    *text*                      Text data to send to the printer  
Data size that can be specified at 1 time is 16 KB (16384 bytes).

**Exception**    **PrinterException**  
**PrinterException** is thrown when an error occurs while this method is being called.  
See "**4.3.6 PrinterException Class**" for details of the error.  
When the data transmission is failed, the communication with the printer is ended, and **PrinterException** may be thrown. See **isConnect** for verifying the connection state with the printer.

**Description**    This method encodes the specified text data to printable text data based on **setInternationalCharacter** and **setCodePage**, and then sends it to the printer.

This method does not add a line feed code at the end of the text data. In order to print to the end, add a line feed code to the end of the text data.

## sendTextEx Send format specified text data

Sends format specified text data to the printer.

The method of syntax (a) or (c) outputs the pending data at first and starts processing.

The method of syntax (b) starts processing according to the constants of the pending data output specifying.

**Syntax**      (a) `public void sendTextEx(String text,  
                                 CharacterBold bold,  
                                 CharacterUnderline underline,  
                                 CharacterReverse reverse,  
                                 CharacterFont font,  
                                 CharacterScale scale,  
                                 PrintAlignment alignment)` throws **PrinterException**

(b) public void **sendTextEx**(String *text*,  
CharacterBold *bold*,  
CharacterUnderline *underline*,  
CharacterReverse *reverse*,  
CharacterFont *font*,  
CharacterScale *scale*,  
PrintAlignment *alignment*,  
OutputPendingData *output*) throws **PrinterException**

(c) public void **sendTextEx**(String *text*,  
CharacterBold *bold*,  
CharacterUnderline *underline*,  
CharacterReverse *reverse*,  
CharacterInversion *inversion*,  
CharacterFont *font*,  
CharacterScale *scale*,  
PrintAlignment *alignment*) throws **PrinterException**

Parameter	<i>text</i>	Text data to send to the printer Data size that can be specified at 1 time is 16 KB (16384 bytes).
	<i>bold</i>	Bold print See "4.3.1(3)① Bold print (CharacterBold)" for available constants.
	<i>underline</i>	Underline See "4.3.1(3)② Underline (CharacterUnderline)" for available constants.
	<i>reverse</i>	Reverse print See "4.3.1(3)③ Reverse print (CharacterReverse)" for available constants.
	<i>inversion</i>	Inversion print See "4.3.1(3)④ Inversion print (CharacterInversion)" for available constants.
	<i>font</i>	Font See "4.3.1(3)⑤ Character font (CharacterFont)" for available constants.
	<i>scale</i>	Character scale See "4.3.1(3)⑥ Character scale (CharacterScale)" for available constants.
	<i>alignment</i>	Alignment See "4.3.1(3)⑦ Alignment (PrintAlignment)" for available constants.
	<i>output</i>	Pending data output specifying See "4.3.1(3)⑧ Pending data output specifying (OutputPendingData)" for available constants.

Exception **PrinterException**  
**PrinterException** is thrown when an error occurs while this method is being called.  
See "**4.3.6 PrinterException Class**" for details of the error.  
When the data transmission is failed, the communication with the printer is ended, and **PrinterException** may be thrown. See **isConnect** for verifying the connection state with the printer.

Description This method encodes the specified text data to printable text data based on **setInternationalCharacter** and **setCodePage**, and then sends it to the printer.

For laying out text data by sending following printer commands with **sendBinary** or **sendDataFile**, specify **PENDING\_DATA\_OUTPUT\_TOGETHER** at *output* in the method of syntax (b).

- "Horizontal Tab"
- "Specify Absolute Position"
- "Specify Relative Position"

When the method of syntax (a) or (c) is executed or **PENDING\_DATA\_OUTPUT\_FIRST** is specified at *output* in the method of syntax (b), the print position set in above becomes invalid.

When **PENDING\_DATA\_OUTPUT\_TOGETHER** is specified at *output* in the method of syntax (b), this method does not add a line feed code at the end of the text data. In order to print to the end, add a line feed code to the end of the text data.

## printBarcode

## Print barcode

Prints barcode.

The method of syntax (a) specifies the barcode data by character string.

The method of syntax (b) specifies the barcode data by character string and specifies the alignment and N:W ratio of the barcode.

The method of syntax (c) specifies the barcode data by the array of bytes and specifies the alignment of the barcode.

The method of syntax (d) is not supported.

Syntax	(a) public void <b>printBarcode</b> (BarcodeSymbol <i>barcodeSymbol</i> , String <i>text</i> , ModuleSize <i>moduleSize</i> , int <i>moduleHeight</i> , HriPosition <i>hriPosition</i> , CharacterFont <i>hriFont</i> , PrintAlignment <i>alignment</i> ) throws <b>PrinterException</b>
	(b) public void <b>printBarcode</b> (BarcodeSymbol <i>barcodeSymbol</i> , String <i>text</i> , ModuleSize <i>moduleSize</i> , int <i>moduleHeight</i> , HriPosition <i>hriPosition</i> , CharacterFont <i>hriFont</i> , PrintAlignment <i>alignment</i> , NwRatio <i>nwRatio</i> ) throws <b>PrinterException</b>
	(c) public void <b>printBarcode</b> (BarcodeSymbol <i>barcodeSymbol</i> , byte[] <i>data</i> , ModuleSize <i>moduleSize</i> , int <i>moduleHeight</i> , HriPosition <i>hriPosition</i> , CharacterFont <i>hriFont</i> , PrintAlignment <i>alignment</i> ) throws <b>PrinterException</b>
	(d) public void <b>printBarcode</b> (BarcodeSymbol <i>barcodeSymbol</i> , String <i>text</i> , ModuleSize <i>moduleSize</i> , PrintAlignment <i>alignment</i> ) throws <b>PrinterException</b>
Parameter	<i>barcodeSymbol</i> Barcode symbol See "4.3.1(3)⑨ Barcode symbol (BarcodeSymbol)" for available constants and corresponding syntax.

*text (data)*

Barcode data to send to the printer  
The input conditions for barcode data are as follows.

Barcode	Number of Data	Inputtable Data Character String (Data)	Remarks
UPC-A	11 to 12 characters	'0' to '9'	
UPC-E	11 to 12 characters	'0' to '9'	
EAN13 JAN13	12 to 13 characters	'0' to '9'	
EAN8 JAN8	7 to 8 characters	'0' to '9'	
CODE39	1 to 150 characters	'0' to '9' 'A' to 'Z' ' ', '\$', '%', '+', '-', '.', '/'	Start code and stop code ('*') are automatically added.
CODE93	1 to 150 bytes	(0x00 to 0x2E)	Input data with 0x2F or more at the end.
CODE128	2 to 150 bytes	(0x00 to 0x66)	When inputting the start code (0x67 to 0x69) of the CODE128 code set. Input data with 0x67 or more at the end.
		(0x00 to 0x7F)	When starting with a CODE128 special code start code ("A", "B", "C").
ITF	2 to 150 characters (However, an even number)	'0' to '9'	
CODABAR	1 to 150 characters	'0' to '9' '\$', '+', '-', '.', '/', ':'	It is needed to specify one of 'A' to 'D' at the beginning and end.
EAN13 add-on JAN13 add-on	Add-on 2: 14 to 15 characters Add-on 5: 17 to 18 characters	'0' to '9'	
Customer Bar Code_JP	-	-	Not supported.
GS1 Databar Omni-directional	13 characters	'0' to '9'	Check digit is automatically added.
GS1 Databar Truncated	13 characters	'0' to '9'	Check digit is automatically added.
GS1 Databar Limited	13 characters	'0' to '9'	Check digit is automatically added.
GS1 Databar Expanded	2 to 255 characters	' ' to '"' '%' to '?' 'A' to 'Z' ' ' to '._' 'a' to 'z' '{'	

*moduleSize*

Barcode width  
See "4.3.1(3)⑩ Module size (ModuleSize)" for available constants.

*moduleHeight*

Barcode height (dot)

- When *barcodeSymbol* is set to the following, the valid range is 1 to 255.

**BARCODE\_SYMBOL\_UPC\_A**  
**BARCODE\_SYMBOL\_UPC\_E**  
**BARCODE\_SYMBOL\_EAN13**  
**BARCODE\_SYMBOL\_JAN13**  
**BARCODE\_SYMBOL\_EAN8**  
**BARCODE\_SYMBOL\_JAN8**  
**BARCODE\_SYMBOL\_CODE39**  
**BARCODE\_SYMBOL\_CODE93**  
**BARCODE\_SYMBOL\_CODE128**  
**BARCODE\_SYMBOL\_ITF**  
**BARCODE\_SYMBOL\_CODABAR**  
**BARCODE\_SYMBOL\_EAN13\_ADDON**  
**BARCODE\_SYMBOL\_JAN13\_ADDON**

- When *barcodeSymbol* is set to the following, the valid range is different by *barcodeSymbol* and *moduleSize*.

<i>barcodeSymbol</i>		
	<i>moduleSize</i>	Valid Range
<b>BARCODE_SYMBOL_GS1_OMNI_DIRECTIONAL</b>		
	<b>BARCODE_MODULE_WIDTH_2</b>	66 to 255
	<b>BARCODE_MODULE_WIDTH_3</b>	99 to 255
	<b>BARCODE_MODULE_WIDTH_4</b>	132 to 255
	<b>BARCODE_MODULE_WIDTH_5</b>	165 to 255
	<b>BARCODE_MODULE_WIDTH_6</b>	198 to 255
<b>BARCODE_SYMBOL_GS1_TRUNCATED</b>		
	<b>BARCODE_MODULE_WIDTH_2</b>	26 to 255
	<b>BARCODE_MODULE_WIDTH_3</b>	39 to 255
	<b>BARCODE_MODULE_WIDTH_4</b>	52 to 255
	<b>BARCODE_MODULE_WIDTH_5</b>	65 to 255
	<b>BARCODE_MODULE_WIDTH_6</b>	78 to 255
<b>BARCODE_SYMBOL_GS1_LIMITED</b>		
	<b>BARCODE_MODULE_WIDTH_2</b>	20 to 255
	<b>BARCODE_MODULE_WIDTH_3</b>	30 to 255
	<b>BARCODE_MODULE_WIDTH_4</b>	40 to 255
	<b>BARCODE_MODULE_WIDTH_5</b>	50 to 255
	<b>BARCODE_MODULE_WIDTH_6</b>	60 to 255
<b>BARCODE_SYMBOL_GS1_EXPANDED</b>		
	<b>BARCODE_MODULE_WIDTH_2</b>	68 to 255
	<b>BARCODE_MODULE_WIDTH_3</b>	102 to 255
	<b>BARCODE_MODULE_WIDTH_4</b>	136 to 255
	<b>BARCODE_MODULE_WIDTH_5</b>	170 to 255
	<b>BARCODE_MODULE_WIDTH_6</b>	204 to 255

<i>hriPosition</i>	HRI character print position See "4.3.1(3)⑪ HRI character print position (HriPosition)" for available constants.
<i>hriFont</i>	HRI character font See "4.3.1(3)⑤ Character font (CharacterFont)" for available constants.
<i>alignment</i>	Alignment See "4.3.1(3)⑦ Alignment (PrintAlignment)" for available constants.
<i>nwRatio</i>	N:W ratio See "4.3.1(3)⑫ N:W ratio (NwRatio)" for available constants. Depending on specified <i>nwRatio</i> and <i>moduleSize</i> , the wide element width is set as shown in the following table.

<i>moduleSize</i>	<i>nwRatio</i>		
	NWRATIO_1TO2	NWRATIO_1TO2_5	NWRATIO_1TO3
BARCODE_MODULE_WIDTH_2	0.500 mm (4 dots)	0.625 mm (5 dots)	0.750 mm (6 dots)
BARCODE_MODULE_WIDTH_3	0.750 mm (6 dots)	1.000 mm (8 dots)	1.125 mm (9 dots)
BARCODE_MODULE_WIDTH_4	1.000 mm (8 dots)	1.250 mm (10 dots)	1.500 mm (12 dots)
BARCODE_MODULE_WIDTH_5	1.250 mm (10 dots)	1.625 mm (13 dots)	1.875 mm (15 dots)
BARCODE_MODULE_WIDTH_6	1.500 mm (12 dots)	1.875 mm (15 dots)	2.250 mm (18 dots)

Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See "4.3.6 PrinterException Class" for details of the error. When the data transmission is failed, the communication with the printer is ended, and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.
Note	The quiet zone is not secured. Set the quiet zone in accordance with the standard of the barcode symbol.
Reference	See "Appendix B Barcode Size List" for details of the barcode size.

<b>printPDF417</b>	<b>Print PDF417</b>
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Prints PDF417.  
The method of syntax (a) specifies PDF417 symbol.  
The method of syntax (b) is fixed to standard PDF417.

Syntax	(a) public void <b>printPDF417</b> (String <i>text</i> , ErrorCorrection <i>errorCorrection</i> , int <i>row</i> , int <i>column</i> , ModuleSize <i>moduleSize</i> , int <i>moduleHeight</i> , PrintAlignment <i>alignment</i> , Pdf417Symbol <i>pdf417Symbol</i> ) throws <b>PrinterException</b>
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(b) public void **printPDF417**(String *text*,  
ErrorCorrection *errorCorrection*,  
int *row*,  
int *column*,  
ModuleSize *moduleSize*,  
int *moduleHeight*,  
PrintAlignment *alignment*) throws **PrinterException**

Parameter	<i>text</i>	Barcode data to send to the printer
	<i>errorCorrection</i>	Error correction level See "4.3.1(3)⑬ Error correction level (ErrorCorrection)" for available constants.
	<i>row</i>	The number of rows (row) The valid range is 0, 3 to 90. When 0 is specified, the number of rows is automatically set.
	<i>column</i>	The number of columns in data area The valid range is 0 to 30. When 0 is specified, the number of columns in the data area is automatically set.
	<i>moduleSize</i>	Nominal fine element width See "4.3.1(3)⑩ Module size (ModuleSize)" for available constants.
	<i>moduleHeight</i>	Module height (dot) The valid range is 2 to 127. When the module height is set smaller, some barcode scanners may not read it. Set 3 or more for normal use.
	<i>alignment</i>	Alignment See "4.3.1(3)⑦ Alignment (PrintAlignment)" for available constants.
	<i>pdf417Symbol</i>	Symbol of PDF417 See "4.3.1(3)⑭ PDF417 symbol (Pdf417Symbol)" for available constants.
Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See " <b>4.3.6 PrinterException Class</b> " for details of the error. When the data transmission is failed, the communication with the printer is ended, and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.	
Note	The quiet zone is not secured. Set the quiet zone in accordance with the standard of the barcode symbol.	
Reference	See "Appendix B Barcode Size List" for details of the barcode size.	

## printQRcode

## Print QR Code

Prints QR Code.

The method of syntax (a) is fixed to QR Code Model 2.

The method of syntax (b) specifies QR Code Model.

Syntax (a) public void **printQRcode**(String *text*,  
ErrorCorrection *errorCorrection*,  
ModuleSize *moduleSize*,  
PrintAlignment *alignment*) throws **PrinterException**

(b) public void **printQRcode**(String *text*,  
ErrorCorrection *errorCorrection*,  
ModuleSize *moduleSize*,  
PrintAlignment *alignment*,  
QrModel *model*) throws **PrinterException**

Parameter	<i>text</i>	Barcode data to send to the printer The version for either syntax (a) or (b) is automatically set depending on the number of data specified on <i>text</i> .
	<i>errorCorrection</i>	Error correction level See "4.3.1(3)⑬ Error correction level (ErrorCorrection)" for available constants.
	<i>moduleSize</i>	Module size See "4.3.1(3)⑩ Module size (ModuleSize)" for available constants.
	<i>alignment</i>	Alignment See "4.3.1(3)⑦ Alignment (PrintAlignment)" for available constants.
	<i>model</i>	QR Code Model See "4.3.1(3)⑮ QR Code Model (QrModel)" for available constants.
Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See " <b>4.3.6 PrinterException Class</b> " for details of the error. When the data transmission is failed, the communication with the printer is ended, and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.	
Note	The quiet zone is not secured. Set the quiet zone in accordance with the standard of the barcode symbol.	
Reference	See "Appendix B Barcode Size List" for details of the barcode size.	

## printDataMatrix

## Print Data Matrix

Prints Data Matrix.

Syntax	public void <b>printDataMatrix</b> (String <i>text</i> , DataMatrixModule <i>dataMatrixModule</i> , ModuleSize <i>moduleSize</i> , PrintAlignment <i>alignment</i> ) throws <b>PrinterException</b>	
Parameter	<i>text</i>	Barcode data to send to the printer
	<i>dataMatrixModule</i>	The number of Data Matrix modules See "4.3.1(3)⑯ Data Matrix module (DataMatrixModule)" for available constants.
	<i>moduleSize</i>	Module size See "4.3.1(3)⑩ Module size (ModuleSize)" for available constants.
	<i>alignment</i>	Alignment See "4.3.1(3)⑦ Alignment (PrintAlignment)" for available constants.



Parameter	<i>text</i>	Barcode data to send to the printer Enter 13 characters from '0' to '9'. The leading '01' is automatically added by the printer. The check digit is automatically calculated by the printer.
	<i>moduleSize</i>	Module size See "4.3.1(3)⑩ Module size (ModuleSize)" for available constants.
	<i>alignment</i>	Alignment See "4.3.1(3)⑦ Alignment (PrintAlignment)" for available constants.
Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See " <b>4.3.6 PrinterException Class</b> " for details of the error. When the data transmission is failed, the communication with the printer is ended and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.	
Reference	See "Appendix B Barcode Size List" for details of the barcode size.	

## **printGS1DataBarStackedOmnidirectional**      Print GS1 Databar Stacked Omni-directional

Prints GS1 Databar Stacked Omni-directional.

Syntax	public void <b>printGS1DataBarStackedOmnidirectional</b> (String <i>text</i> , int <i>moduleHeight</i> , ModuleSize <i>moduleSize</i> , PrintAlignment <i>alignment</i> ) throws <b>PrinterException</b>	
Parameter	<i>text</i>	Barcode data to send to the printer Enter 13 characters from '0' to '9'. The leading '01' is automatically added by the printer. The check digit is automatically calculated by the printer.
	<i>moduleHeight</i>	Barcode module height (the number of the modules) The valid range is 33 to 255.
	<i>moduleSize</i>	Module size See "4.3.1(3)⑩ Module size (ModuleSize)" for available constants.
	<i>alignment</i>	Alignment See "4.3.1(3)⑦ Alignment (PrintAlignment)" for available constants.
Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See " <b>4.3.6 PrinterException Class</b> " for details of the error. When the data transmission is failed, the communication with the printer is ended and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.	
Reference	See "Appendix B Barcode Size List" for details of the barcode size.	

**printGS1DataBarExpandedStacked****Print GS1 Databar Expanded Stacked**

Prints GS1 Databar Expanded Stacked.

Syntax	public void <b>printGS1DataBarExpandedStacked</b> (String <i>text</i> , int <i>column</i> , ModuleSize <i>moduleSize</i> , PrintAlignment <i>alignment</i> ) throws <b>PrinterException</b>	
Parameter	<i>text</i>	Barcode data to send to the printer Enter any number of characters using the following: ', '!', '"', '%', '&', '(', ')', '*', '+', ',', '-', '.', '/', ':', ';', '<', '=', '>', '?', '_', '0' to '9', 'A' to 'Z', 'a' to 'z'. Enter '{1' to FNC1. Be sure to input the check digit because it is not automatically calculated by the printer.
	<i>column</i>	The number of columns Specify the number of the columns in 1 line. The valid range is the even number from 2 to 20.
	<i>moduleSize</i>	Module size See "4.3.1(3)⑩ Module size (ModuleSize)" for available constants.
	<i>alignment</i>	Alignment See "4.3.1(3)⑦ Alignment (PrintAlignment)" for available constants.
Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See " <b>4.3.6 PrinterException Class</b> " for details of the error. When the data transmission is failed, the communication with the printer is ended, and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.	
Reference	See "Appendix B Barcode Size List" for details of the barcode size.	

**printAztecCode****Print Aztec Code**

This method is not supported. When this method is executed, **PrinterException** is thrown.

Syntax	public void <b>printAztecCode</b> (String <i>text</i> , int <i>layer</i> , int <i>errorCorrection</i> , ModuleSize <i>moduleSize</i> , AztecSymbol <i>aztecSymbol</i> , PrintAlignment <i>alignment</i> ) throws <b>PrinterException</b>	
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**cutPaper****Cut paper**

Selects enabled/disabled of the paper feed to the cut position and cuts the paper.

Syntax	public void <b>cutPaper</b> (CuttingMethod <i>cuttingMethod</i> ) throws <b>PrinterException</b>	
Parameter	<i>cuttingMethod</i>	Cutting method See "4.3.1(3)⑩ Cutting method (CuttingMethod)" for available constants.

Exception     **PrinterException**  
**PrinterException** is thrown when an error occurs while this method is being called.  
See "**4.3.6 PrinterException Class**" for details of the error.  
When the data transmission is failed, the communication with the printer is ended, and **PrinterException** may be thrown. See **isConnect** for verifying the connection state with the printer.

<b>feedPosition</b>	<b>Paper form feed</b>
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Performs the paper form feed of marked paper or label to the cut position.

Syntax        public void **feedPosition**(FeedPosition *feedPosition*) throws **PrinterException**

Parameter    *feedPosition*                Form feed position  
See "4.3.1(3)⑱ Form feed position (FeedPosition)" for available constants.

Exception     **PrinterException**  
**PrinterException** is thrown when an error occurs while this method is being called.  
See "**4.3.6 PrinterException Class**" for details of the error.  
When the data transmission is failed, the communication with the printer is ended, and **PrinterException** may be thrown. See **isConnect** for verifying the connection state with the printer.

Note            The paper form feed is not performed when this method is executed at the form feed position of the marked paper or the label.

<b>openDrawer</b>	<b>Open cash drawer</b>
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Opens the specified cash drawer.  
Supported only by SLP721RT.

Syntax        public void **openDrawer**(DrawerNum *drawerNum*, PulseWidth *onOffTime*)  
throws **PrinterException**

Parameter    *drawerNum*                Drawer number  
See "4.3.1(3)⑳ Drawer number (DrawerNum)" for available constants.

*onOddTime*                Pulse width  
See "4.3.1(3)㉑ Pulse width (PulseWidth)" for available constants.

Exception     **PrinterException**  
**PrinterException** is thrown when an error occurs while this method is being called.  
See "**4.3.6 PrinterException Class**" for details of the error.  
When the data transmission is failed, the communication with the printer is ended, and **PrinterException** may be thrown. See **isConnect** for verifying the connection state with the printer.

<b>buzzer</b>	<b>Sound buzzer</b>
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This method is not supported. When this method is executed, **PrinterException** is thrown.

Syntax        public void **buzzer**(int *onTime*, int *offTime*) throws **PrinterException**

Sounds the external buzzer.  
Supported only by SLP721RT.

Syntax	public void <b>externalBuzzer</b> (BuzzerPattern <i>buzzerPattern</i> , int <i>buzzerCount</i> ) throws <b>PrinterException</b>	
Parameter	<i>buzzerPattern</i>	Buzzer pattern See "4.3.1(3)② Buzzer pattern (BuzzerPattern)" for available constants. The external buzzer sound stops under one of the following conditions: · Sounding for the number of times set by <i>buzzerCount</i> · Opening the cover · Executing the printer command "Stop External Buzzer"
	<i>buzzerCount</i>	Buzzer sound count (times) The external buzzer sounds for the number of times set by <i>buzzerCount</i> . The valid range is 1 to 255.
Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See " <b>4.3.6 PrinterException Class</b> " for details of the error. When the data transmission is failed, the communication with the printer is ended, and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.	

Sends binary data to the printer.

Syntax	public void <b>sendBinary</b> (byte [] <i>binary</i> ) throws <b>PrinterException</b>	
Parameter	<i>binary</i>	Binary data to send to the printer Data size that can be specified at 1 time is 16 KB (16384 bytes).
Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See " <b>4.3.6 PrinterException Class</b> " for details of the error. When the data transmission is failed, the communication with the printer is ended, and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.	
Description	This method sends the specified binary data to the printer without conversion.  By sending printer commands as binary data with this method, printer functions which are not supported in the library become available. However, this method does not support commands which get responses from the printer.	

Sends file data.  
The method of syntax (a), dithering is fixed to be disabled.  
The method of syntax (b), dithering can be specified.

Syntax	(a) public void <b>sendDataFile</b> (String <i>fileName</i> , PrintAlignment <i>alignment</i> ) throws <b>PrinterException</b>
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(b) public void **sendDataFile**(String *fileName*,  
PrintAlignment *alignment*,  
Dithering *dithering*) throws **PrinterException**

Parameter    *fileName*

File path of the data file to send to the printer  
The formats that can be entered are described below.

- Absolute path string handled by Java standard class "java.io.File"  
When the application targets Android 10 (API 29) or later, please note that some files cannot be handled directly.  
See "3.5 Precautions - About Scoped Storage" for details.
- URI string of the following scheme name handled by the class "android.net.Uri" prepared for Android
  - file://
  - content://

It is necessary for this parameter to specify the URI string obtained from "Storage Access Framework". Please note that URI created without obtaining the URI string from "Storage Access Framework" may not be able to open the file.

The maximum file size that can be specified is 1 MB (1048576 bytes).  
The file extensions that can be sent and the file transmission are described below.

- .bmp, .jpg, .jpeg, .png  
Data is sent to the printer as image file. Colored image file is converted to monochrome image by binarization and registered. Printing is performed at one time after mapping the image file in memory of the printer.
- .txt  
Data is sent to the printer as text data. Text data format supports UTF-8. This method encodes the text data to printable text data based on the settings of **setInternationalCharacter** and **setCodePage**, and then sends it to the printer.  
This method does not add a line feed code at the end of the text data. In order to print to the end, add a line feed code to the end of the text data.
- .bin, .dat  
Data is sent to the printer as the binary data without conversion.

*alignment*

Alignment

The alignment is valid only when the file extension specified on *fileName* is .bmp, .jpg, .jpeg, .png, or .txt.  
See "4.3.1(3) ⑦ Alignment (PrintAlignment)" for available constants.

*dithering*

Dithering

The dithering is valid only when the file extension specified on *fileName* is .bmp, .jpg, .jpeg, or .png.  
See "4.3.1(3) ②③ Dithering (Dithering)" for available constants.

Exception    **PrinterException**

**PrinterException** is thrown when an error occurs while this method is being called.  
See "**4.3.6 PrinterException Class**" for details of the error.  
When the data transmission is failed, the communication with the printer is ended, and **PrinterException** may be thrown. See **isConnect** for verifying the connection state with the printer.



Prints an image of the specified "android.graphics.Bitmap" type.

Syntax	public void <b>sendImage</b> (Bitmap <i>bitmap</i> , PrintAlignment <i>alignment</i> , Dithering <i>dithering</i> ) throws <b>PrinterException</b>	
Parameter	<i>bitmap</i>	"android.graphics.Bitmap" type object to send to the printer Data is sent to the printer as image. Colored image file is converted to monochrome image by binarization and registered.
	<i>alignment</i>	Alignment See "4.3.1(3) ⑦ Alignment (PrintAlignment)" for available constants.
	<i>dithering</i>	Dithering See "4.3.1(3) ㉓ Dithering (Dithering)" for available constants.
Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See " <b>4.3.6 PrinterException Class</b> " for details of the error. When the data transmission is failed, the communication with the printer is ended, and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.	

Prints the specified page of the selected PDF file.

Syntax	public void <b>printPDF</b> (String <i>fileName</i> , int <i>startIndex</i> , int <i>endIndex</i> , Rotate <i>rotate</i> , ImageScale <i>imageScale</i> , int <i>bottomMargin</i> , Dithering <i>dithering</i> , PrintAlignment <i>alignment</i> ) throws <b>PrinterException</b>	
Parameter	<i>fileName</i>	File path of the PDF file The file extension for supporting PDF is .pdf. A maximum of 1 MB (1048576 bytes) of file size can be specified. The formats that can be entered are described below. <ul style="list-style-type: none"> <li>• Absolute path string handled by Java standard class "java.io.File" When targeting Android 10 (API 29) or later, please note that some files cannot be handled directly. See "3.5 Precautions - About Scoped Storage" for details.</li> <li>• URI string of the following scheme name handled by the class "android.net.Uri" prepared for Android <ul style="list-style-type: none"> <li>• file://</li> <li>• content://</li> </ul> It is necessary to specify the URI string obtained from "Storage Access Framework" for this parameter. Please note that URI created without being obtained from "Storage Access Framework" may not be able to open the file.</li> </ul>

<i>startIndex</i>	<p>Start number of the printed page</p> <p>The range is -1, 1 to the number of pages in the PDF file.</p> <p>When -1 is specified for <i>startIndex</i>, all pages are printed.</p> <p>When -1 is specified for <i>startIndex</i>, the value of <i>endIndex</i> is ignored.</p> <p>When 1 or more is specified for <i>startIndex</i>, pages from the page number specified in <i>startIndex</i> to the page number specified in <i>endIndex</i> are printed.</p> <p>When a value more than the value specified for <i>endIndex</i> is specified for <i>startIndex</i>, an error occurs.</p> <p>When an out-of-range value is specified for <i>startIndex</i> or <i>endIndex</i>, an error occurs.</p>
<i>endIndex</i>	<p>End number of the printed page</p> <p>The range is 1 to 2147483647.</p> <p>When a value more than the number of pages in the PDF file is specified for <i>endIndex</i>, pages from the page number specified in <i>startIndex</i> to the last page of the PDF file are printed.</p>
<i>rotate</i>	<p>Rotation direction of the image</p> <p>See "4.3.1(3)②④ Image rotation direction (Rotate)" for available constants.</p>
<i>imageScale</i>	<p>Image scaling</p> <p>See "4.3.1(3)②⑤ Image scaling (ImageScale)" for available constants.</p> <p>When <b>IMAGE_SCALE_WIDTH_FIT</b> is specified for <i>imageScale</i>, the image width is converted to the print width of the printer while maintaining the aspect ratio.</p>
<i>bottomMargin</i>	<p>Bottom margin (dot)</p> <p>The range is -1, 0 to 2400.</p> <p>When -1 is specified for <i>bottomMargin</i>, the image is created and printed while maintaining the bottom margin.</p> <p>When a value between 0 and 2400 is specified for <i>bottomMargin</i>, the bottom margin is changed to the specified size.</p> <p>When a value between 0 and 2400 is specified for <i>bottomMargin</i>, blank pages are not printed.</p>
<i>dithering</i>	<p>Dithering</p> <p>See "4.3.1(3)②③ Dithering (Dithering)" for available constants.</p>
<i>alignment</i>	<p>Alignment</p> <p>See "4.3.1(3)⑦ Alignment (PrintAlignment)" for available constants.</p>
Exception	<p><b>PrinterException</b></p> <p><b>PrinterException</b> is thrown when an error occurs while this method is being called.</p> <p>See "<b>4.3.6 PrinterException Class</b>" for details of the error.</p> <p>When the data transmission is failed, the communication with the printer is ended, and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.</p>
Description	<p>PDF is converted to printable format for the printer and is sent to the printer.</p> <p>The color image data is converted to monochrome image by binarization.</p> <p>When the memory switches MS 1-3 (Mark Mode Selection) of the printer is set to "Enable", form feed of marked paper or label is performed after printing the PDF page.</p>
Note	<p>No guarantee of printing operation when more than 100 pages are printed at a time.</p>

Gets the latest printer status.

The method of syntax (a) returns the printer status with return value.

The method of syntax (b) stores the printer status in an array of int type.

Syntax (a) public int **getStatus()** throws **PrinterException**

(b) public void **getStatus**(int [] *buf*) throws **PrinterException**

Return value Status retrieved from the printer

Parameter *buf* Status retrieved from the printer

Exception **PrinterException**

**PrinterException** is thrown when an error occurs while this method is being called.

See "4.3.6 **PrinterException Class**" for details of the error.

When the data transmission is failed, the communication with the printer is ended, and **PrinterException** may be thrown. See **isConnect** for verifying the connection state with the printer.

Description Status retrieved from the printer is stored in an array of NSInteger type.

The printer status is shown below.

When the connection failed, the printer status is shown in 0x80000000.

Bit	Function	Value	
		0	1
0	Voltage error	No error	Error
1	Hardware error	No error	Error
2	Head temperature error	No error	Error
3	Cutter error	No error	Error
4	Out-of-paper error	No error	Error
5	Reserved	Fixed	-
6	Paper jam error while detecting mark	No error	Error
7	Cover open error	No error	Error
8	FEED Switch status	OFF	ON
9	Reserved	Fixed	-
10	Paper feed status	Stop	Operating
11	Return-waiting status	Not waiting	Waiting
12	Reserved	Fixed	-
13	Taken sensor status	Paper removed	Paper removal waiting
14	Reserved	-	Fixed
15	Drawer switch input status	Low <sup>*1</sup>	High
16	FLASH memory rewriting	Not rewriting	Rewriting
17 to 18	Reserved	Fixed	-
19 to 31	Reserved	-	Fixed

\*1: Low is fixed in SLP720RT.

**setCallbackFunctionListener****Start/End callback of printer status change**

Starts or ends callback to be executed according to changes of the printer status.

Syntax	public void <b>setCallbackFunctionListener</b> (CallbackFunctionListener <i>listener</i> ) throws <b>PrinterException</b>
Parameter	<i>listener</i> Instance of <b>CallbackFunctionListener</b> interface
Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See " <b>4.3.6 PrinterException Class</b> " for details of the error.
Description	Register the process executed by callback with <b>onStatusChanged</b> . When specify the instance of <b>CallbackFunctionListener</b> interface in <i>listener</i> and execute this method, the callback is started. When specify null in <i>listener</i> and execute this method, the callback is stopped.  The keeping instance kept by of <b>CallbackFunctionListener</b> interface is discarded by any of the following: • Execute this method specifying null in <i>listener</i> • Execute <b>disconnect</b>  This call of the method can be used when <b>connect</b> is executed and <b>isConnect</b> is true.

**abort****Abort waiting state of printer**

Aborts the waiting state of the printer.

Syntax	public void <b>abort</b> () throws <b>PrinterException</b>
Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See " <b>4.3.6 PrinterException Class</b> " for details of the error. When the data transmission is failed, the communication with the printer is ended, and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.
Description	When sending of image file by <b>sendDataFile</b> is aborted, the printer does not accept other processes until the specified image file is received completely. (Methods and transmission data are misinterpreted and recognized as a part of the image file.) To solve this situation, use this method to abort the waiting state of the printer. Note that when this method is executed, a part of unprinted image file may be printed.

**registerLogo****Register logo**

Registers image file to NV graphics memory in the printer as a logo.  
The method of syntax (a), dithering is fixed to be disabled.  
The method of syntax (b), dithering can be specified.

Syntax	(a) public void <b>registerLogo</b> (String <i>fileName</i> , String <i>id</i> ) throws <b>PrinterException</b>  (b) public void <b>registerLogo</b> (String <i>fileName</i> , String <i>id</i> , Dithering <i>dithering</i> ) throws <b>PrinterException</b>
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Parameter	<i>fileName</i>	<p>File path of image file to register as a logo The formats that can be entered are described below.</p> <ul style="list-style-type: none"> <li>• Absolute path string handled by Java standard class "java.io.File" When the application targets Android 10 (API 29) or later, please note that some files cannot be handled directly. See "3.5 Precautions - About Scoped Storage" for details.</li> <li>• URI string of the following scheme name handled by the class "android.net.Uri" prepared for Android <ul style="list-style-type: none"> <li>• file://</li> <li>• content://</li> </ul> It is necessary for this parameter to specify the URI string obtained from "Storage Access Framework". Please note that URI created without obtaining the URI string from "Storage Access Framework" may not be able to open the file.</li> </ul> <p>The file extensions supporting image file are .bmp, .jpg, .jpeg, and .png. When the image file is colored, it is converted to monochrome image by binarization and registered.</p>
	<i>id</i>	<p>Logo ID to register (key code) Specify the logo ID to register by character string of 2 characters. The valid characters are ASCII character code from 20h (space) to 7Eh (tilde) such as alphanumeric ('0' to '9', 'A' to 'Z', 'a' to 'z').</p>
	<i>dithering</i>	<p>Dithering See "4.3.1(3)② Dithering (Dithering)" for available constants.</p>
Exception	<b>PrinterException</b>	<p><b>PrinterException</b> is thrown when an error occurs while this method is being called. See "<b>4.3.6 PrinterException Class</b>" for details of the error. When the data transmission is failed, the communication with the printer is ended, and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.</p>

printLogo		Print logo
Prints the registered logo.		
Syntax	public void <b>printLogo</b> (String <i>id</i> , PrintAlignment <i>alignment</i> ) throws <b>PrinterException</b>	
Parameter	<i>id</i>	<p>Logo ID to print (key code) Specify the ID of the registered logo as a character string.</p>
	<i>alignment</i>	<p>Alignment See "4.3.1(3)⑦ Alignment (PrintAlignment)" for available constants.</p>
Exception	<b>PrinterException</b>	<p><b>PrinterException</b> is thrown when an error occurs while this method is being called. See "<b>4.3.6 PrinterException Class</b>" for details of the error. When the data transmission is failed, the communication with the printer is ended, and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.</p>

## unregisterLogo

## Delete registered logo

Deletes the registered logo.

Syntax      public void **unregisterLogo**(String *id*) throws **PrinterException**

Parameter    *id*                      Logo ID to delete (key code)  
Specify the ID of the registered logo as a character string.

Exception    **PrinterException**  
**PrinterException** is thrown when an error occurs while this method is being called.  
See "**4.3.6 PrinterException Class**" for details of the error.  
When the data transmission is failed, the communication with the printer is ended, and **PrinterException** may be thrown. See **isConnect** for verifying the connection state with the printer.

## registerStyleSheet

## Register style sheet

This method is not supported. When this method is executed, **PrinterException** is thrown.

Syntax      public void **registerStyleSheet**(String *fileName*, int *num*) throws **PrinterException**

## unregisterStyleSheet

## Delete registered style sheet

This method is not supported. When this method is executed, **PrinterException** is thrown.

Syntax      public void **unregisterStyleSheet**(int *num*) throws **PrinterException**

## resetPrinter

## Reset printer

Resets the printer hardware.

Syntax      public void **resetPrinter**() throws **PrinterException**

Exception    **PrinterException**  
**PrinterException** is thrown when an error occurs while this method is being called.  
See "**4.3.6 PrinterException Class**" for details of the error.  
When the data transmission is failed, the communication with the printer is ended, and **PrinterException** may be thrown. See **isConnect** for verifying the connection state with the printer.

Description    For Bluetooth connection:  
The printer hardware reset is performed by the printer command "Printer Reset".  
  
For USB connection:  
The printer reset is performed by using the SOFT\_RESET function in USB printer class.  
  
For TCP/IP connection:  
The reset is performed to the connected printer by our proprietary command (reset request) to TCP port 26100.  
  
The connection with the printer is retained even after this method is executed.

**Syntax**     `public void getPrinterResponse(int id, Object buf) throws PrinterException`

Parameter	<i>id</i>	Response type constant See "4.3.1(2)② Response type" for available constants.
	<i>buf</i>	Buffer that stores the retrieved response data This method stores the response data specified by <i>id</i> to the object specified by <i>buf</i> . The buffer type varies depending on the response type constant. See the following table for buffer types.

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Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See " <b>4.3.6 PrinterException Class</b> " for details of the error.
Description	This method searches for SII printer. The printer information of the found printer is stored to <b>PrinterInfo</b> class described later.

## startDiscoveryPrinter Start printer search (TCP/IP)

Searches for SII printer connecting to the same network.

Syntax	public void <b>startDiscoveryPrinter</b> (PrinterListener <i>listener</i> , int <i>retry</i> , int <i>timeout</i> ) throws <b>PrinterException</b>	
Parameter	<i>listener</i>	Instance of <b>PrinterListener</b> Completion of this method or cancellation by <b>cancelDiscoveryPrinter</b> is notified to the user application as an end event by <b>finishEvent</b> through the instance set in <i>listener</i> .
	<i>retry</i>	Retry count (times) Sends the local broadcast packet the number of times set by <i>retry</i> . The valid range is 1 to 5. When the value is specified less than 1, the number is set to 1. When the value is specified more than 5, the number is set to 5.
	<i>timeout</i>	Search timeout period (millisecond: ms) Sets the timeout period per search. Each time the local broadcast packet is sent, this method waits for a response from the printer until the period specified by <i>timeout</i> elapses. The valid range is 3000 to 60000. When the value is specified less than 3000, the period is set to 3000 ms. When the value is specified more than 60000, the period is set to 60000 ms.
Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See " <b>4.3.6 PrinterException Class</b> " for details of the error.	
Description	This method searches for SII printer. The printer information of the found printer is stored to <b>PrinterInfo</b> class described later.	

## cancelDiscoveryPrinter Cancel printer search

Cancels **startDiscoveryPrinter** under execution.

Syntax	public void <b>cancelDiscoveryPrinter</b> ()
Description	Cancellation by this method is notified as an end event to the user application by <b>finishEvent</b> through the instance set in <i>listener</i> of <b>startDiscoveryPrinter</b> .

## getFoundPrinter Get found printer information

Gets the information of the printer found by **startDiscoveryPrinter** in ArrayList from the **PrinterInfo** class, which is the storage destination.

Syntax	public ArrayList< <b>PrinterInfo</b> > <b>getFoundPrinter</b> ()
--------	--

Return value ArrayList of **PrinterInfo** class

## **getSendTimeout**

## Get send timeout period

Gets the send timeout period.

Syntax      `public int getSendTimeout()`

Return value Send timeout period (millisecond: ms)

Description This method can get the send timeout period regardless of whether **isConnect** is true or false.

## **setSendTimeout**

## Set send timeout period

Sets the send timeout period.

Syntax      `public void setSendTimeout(int sendTimeout)`

Parameter    *sendTimeout*      Send timeout period (millisecond: ms)  
The valid range is 100 to 90000.  
When the value out of the valid range is specified, the value is set to 10000 ms.

Description When the send timeout period is not set by this method, the value is set to 10000.

This method can set the send timeout period regardless of whether **isConnect** is true or false.

The set timeout period becomes effective at the next data sending.

## **getReceiveTimeout**

## Get receive timeout period

Gets the receive timeout period.

Syntax      `public int getReceiveTimeout()`

Return value Receive timeout period (millisecond: ms)

Description This method can get the receive timeout period regardless of whether **isConnect** is true or false.

## **setReceiveTimeout**

## Set receive timeout period

Sets the receive timeout period.

Syntax      `public void setReceiveTimeout(int receiveTimeout)`

Parameter    *receiveTimeout*      Receive timeout period (millisecond: ms)  
The valid range is 100 to 90000.  
When the value out of the valid range is specified, the value is set to 10000 ms.

Description When the receive timeout period is not set by this method, the value is set to 10000.

This method can set the receive timeout period regardless of whether **isConnect** is true or false.

The set timeout period becomes effective at the next data receiving.

## **getInternationalCharacter**

## **Get international character set**

Gets the value of international character set.

Syntax      `public int getInternationalCharacter()`

Return value   See "4.3.1(2)③ International character set" for details of the value.

Description   When the text data is sent by **sendText**, **sendTextEx**, or **sendDataFile**, the print result of the following character codes varies. See "Appendix A Character Set" for details about characters to be printed.

Character codes with the varying print result depending on the configuration of the international character:

0x23, 0x24, 0x40, 0x5B, 0x5C, 0x5D, 0x5E, 0x60, 0x7B, 0x7C, 0x7D, 0x7E

## **setInternationalCharacter**

## **Set international character set**

Sets the value of international character set.

Syntax      `public void setInternationalCharacter(int internationalCharacter)`

Parameter   *internationalCharacter*   International character set constant  
See "4.3.1(2)③ International character set" for the configurable values.  
When an invalid value is specified, it is ignored.

Description   When the international character set is not set by this method, it is as follows depending on the language setting of an Android device.

When the language setting of the Android device is Japanese:

**COUNTRY\_JAPAN**

When the language setting of the Android device is other than Japanese:

**COUNTRY\_USA**

## **getCodePage**

## **Get codepage**

Gets the value of codepage.

Syntax      `public int getCodePage()`

Return value   See "4.3.1(2)④ Codepage" for details of the value.

Description   The encoder used for sending the text data by **sendText**, **sendTextEx**, or **sendDataFile** is changed. See "Appendix A Character Set" for details about characters to be printed.

## **setCodePage**

## **Set codepage**

Sets the value of codepage.

Syntax      `public void setCodePage(int codePage)`

Parameter   *codePage*      Codepage constant  
See "4.3.1(2)④ Codepage" for the configurable values.  
When an invalid value is specified, it is ignored.

Description When the codepage is not set by this method, it is as follows depending on the language setting of an Android device.  
 When the language setting of the Android device is Japanese:  
**CODE\_PAGE\_KATAKANA**  
 When the language setting of the Android device is other than Japanese:  
**CODE\_PAGE\_1252**

## getPrinterModel Get printer model

Gets the value of the connecting printer model.

Syntax `public int getPrinterModel()`

Return value See "4.3.1(2)① Printer model" for details of the value.  
**PRINTER\_MODEL\_DEFAULT** is returned when **isConnect** is false.

Description Even when the printer is not connected, when **connect** has succeeded once, the printer model value successfully connected last time is returned.

## getPortType Get connecting port type

Gets the port type used for connecting with the printer.

Syntax `public int getPortType()`

Return value See "4.3.1(2)⑤ Port type" for details of the value.  
**PRINTER\_TYPE\_BLUETOOTH** is returned when **isConnect** is false.

Description Even when the printer is not connected, when **connect** has been succeeded once, the port type value successfully connected last time is returned.

## isConnect Verify connection state with printer

Verifies connection state with the printer.

Syntax `public boolean isConnect()`

Return value true Connected to a printer  
 false Not connected to a printer

Description When the data transmission is failed, the communication with the printer is ended, and this method returns false. When false is returned, reconnect with the printer by **connect**.

## getSocketKeepingTime Get socket keeping time

Gets the socket keeping time.

Syntax `public int getSocketKeepingTime()`

Return value Socket keeping time (millisecond: ms)

Description This method can get the socket keeping time regardless of whether **isConnect** is true or false.

**setSocketKeepingTime****Set socket keeping time**

Sets the socket keeping time.

Syntax      public void **setSocketKeepingTime**(int *socketKeepingTime*)

Valid range    60000 to 300000 (millisecond: ms)  
When the value is specified less than 60000, the time is set to 60000 ms.  
When the value is specified more than 300000, the time is set to 300000 ms.

Default        300000

Description    This method can set the socket keeping time regardless of whether **isConnect** is true or false.

For the socket keeping time, specify a time equal to Receive Timeout of the printer to be connected. The setting of Receive Timeout can be changed in the Android app "SII Printer Utility" on the Google Play.

The set socket keeping time becomes effective at the next **connect** execution.

**getPrintSmartLabelMode****Get paper when printing label file**

Gets the paper when printing label file.

Syntax        public int **getPrintSmartLabelMode**()

Return value   See "4.3.1(2)⑥ Paper selection with or without mark when printing label file" for details of the value.

Description    This method can get the paper regardless of whether **isConnect** is true or false.

**setPrintSmartLabelMode****Set paper when printing label file**

Sets the paper when printing label file.

Syntax        public void **setPrintSmartLabelMode**(int *paperMode*)

Parameter    *paperMode*            Paper selection with or without mark when printing label file  
See "4.3.1(2)⑥ Paper selection with or without mark when printing label file" for the configurable values.  
When an invalid value is specified, it is ignored.

Description    When specifying the marked paper, feeds the paper to the print start position with feeding the paper backward at **printSmartLabelImageData** execution.

When specifying the paper without the mark, the paper is not fed to the print start position at **printSmartLabelImageData** execution.

**getVersion****Get SDK version**

Gets the SDK version as a character string.

Syntax        public String **getVersion**()

Return value   SDK version character string (Example: When the SDK version is Ver.1.0.0, the return value is "1.0.0")

**Description** This method can get the SDK version regardless of whether **isConnect** is true or false.

<b>printSmartLabelImageData</b>	Print label
Prints labels.	
Syntax	public void <b>printSmartLabelImageData</b> (SmartLabelManager <i>labelManager</i> ) throws <b>PrinterException</b>
Parameter	<i>labelManager</i> Instance of <b>SmartLabelManager</b> class
Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See " <b>4.3.6 PrinterException Class</b> " for details of the error. When the data transmission is failed, the communication with the printer is ended, and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.
Description	See " <b>4.3.9 SmartLabelManager Class</b> " for the print example using this method.

controlTransaction		Start/End batch processing
	Starts or ends batch processing.	
Syntax	public void <b>controlTransaction</b> (TransactionFunction <i>transactionFunction</i> ) <div style="text-align: right;">throws <b>PrinterException</b></div>	
Parameter	<i>transactionFunction</i>	Batch processing selection See "4.3.1(3)②⑥ Batch processing selection (TransactionFunction)" for available constants.
Exception	<b>PrinterException</b> <b>PrinterException</b> is thrown when an error occurs while this method is being called. See " <b>4.3.6 PrinterException Class</b> " for details of the error. When data transmission fails, communication with the printer may be terminated and <b>PrinterException</b> may be thrown. See <b>isConnect</b> for verifying the connection state with the printer.	
Description	The procedure of batch processing is as follows: (1) Start batch processing. Specify <b>TRANSACTION_START</b> . (2) Execute the method. In the case of the batch processing target method, buffering of transmission data is started. The transmission data of the batch processing target method executed during buffering is buffered in the transmission buffer without being sent to the printer. The maximum size of transmission data to be buffered is system dependent. If the buffered transmission data exceeds the maximum size, the batch processing target method at the time of exceeding becomes an error. If an error occurs, the transmission data up to the error is retained. As for the retained transmission data, finish the batch processing in step (3). In the case of a method other than the batch processing target method, transmission data is immediately executed without being buffered.	

(3) Finish batch processing.

When **TRANSACTION\_PRINT** is specified, the buffered transmission data is sent to the printer. The buffered transmission data is retained even after sent to the printer.

The retained transmission data is discarded by any of the following:

- Specify **TRANSACTION\_CLEAR**
- Specify **TRANSACTION\_START**
- Execute **disconnect**

The batch processing target methods are as follows:

- sendText**
- sendTextEx**
- printBarcode**
- printPDF417**
- printQRcode**
- printDataMatrix**
- printMaxiCode**
- printGS1DataBarStacked**
- printGS1DataBarStackedOmnidirectional**
- printGS1DataBarExpandedStacked**
- cutPaper**
- openDrawer**
- externalBuzzer**
- feedPosition**
- sendBinary**
- sendDataFile**
- sendImage**
- printPDF**
- printLogo**<sup>\*1</sup>
- printSmartLabelImageData**

\*1: The method under batch processing does not notify the error even when the registered logo does not exist.

### 4.3.2 PrinterEvent Class

**PrinterEvent** class gets the end event that occurs when **startDiscoveryPrinter** is terminated.

#### (1) Method List

Methods provided by the **PrinterEvent** class are shown in the following table.

Name	Description
<b>getEventType</b>	Get end event

#### (2) End event constant

Constants used for getting the end event are shown in the following table.

Constant Name	Description	Value
<b>EVENT_FINISHED_DISCOVERY</b>	Completion of <b>startDiscoveryPrinter</b>	1
<b>EVENT_CANCELED_DISCOVERY</b>	Cancellation by <b>cancelDiscoveryPrinter</b>	2

#### (3) Method Details

<b>getEventType</b>	Get end event
---------------------	---------------

Gets the end event when **startDiscoveryPrinter** is terminated.

Syntax      `public int getEventType()`

Return value    See "4.3.2(2) End event constant" for details of the value.

Description    Whether **startDiscoveryPrinter** has been completed or the search has been canceled by **cancelDiscoveryPrinter** can be determined by the end event.  
Even when the printer was not discovered, **EVENT\_FINISHED\_DISCOVERY** is returned.



### 4.3.3 PrinterListener Interface

**PrinterListener** interface is for getting the end event when **startDiscoveryPrinter** is terminated.

#### (1) Method List

Methods of the **PrinterListener** interface are shown in the following table.

Name	Description
<b>finishEvent</b>	End event of printer search

#### (2) Method Details

<b>finishEvent</b>	End event of printer search
--------------------	-----------------------------

End event that is called when **startDiscoveryPrinter** is completed, or when **cancelDiscoveryPrinter** is executed.

Syntax      `public void finishEvent(PrinterEvent event)`

Parameter    *event*                      End event  
It is specified by **PrinterEvent** class.

Description    This method is an interface, so it is not implemented.  
Implement this method in the user application that receives the notification of the end event by completion of **startDiscoveryPrinter** or cancellation by **cancelDiscoveryPrinter**. Determine the type of the end event by **getEventType** in **PrinterEvent** class.

#### 4.3.4 PrinterInfo Class

**PrinterInfo** class stores the information of the printer found by **startDiscoveryPrinter**.

##### (1) Method List

Printer model name (Bluetooth device name), Bluetooth address, MAC address, IP address, port name (device path) and pairing status can be retrieved. Methods of **PrinterInfo** class are shown in the following table.

Name	Description
<b>getPrinterModelName</b>	Get printer model name
<b>getBluetoothAddress</b>	Get Bluetooth address
<b>getMacAddress</b>	Get MAC address
<b>getIpAddress</b>	Get IP address
<b>getIsBonded</b>	Get pairing status
<b>getDevicePath</b>	Get device path

##### (2) Method Details

#### **getPrinterModelName** Get printer model name

Gets the character string of the printer model name (Bluetooth device name) from the printer information found by **startDiscoveryPrinter**.

Supported only by SLP721RT.

Syntax      `public String getPrinterModelName()`

Return value   Printer model name (Bluetooth device name)

#### **getBluetoothAddress** Get Bluetooth address

Gets the character string of the Bluetooth address from the printer information found by **startDiscoveryPrinter**.

Supported only by SLP721RT.

Syntax      `public String getBluetoothAddress()`

Return value   Bluetooth address

#### **getMacAddress** Get MAC address

Gets the character string of the MAC address from the printer information found by **startDiscoveryPrinter**.

Syntax      `public String getMacAddress()`

Return value   MAC address

**getIPAddress****Get IP address**

Gets the character string of the IP address from the printer information found by **startDiscoveryPrinter**.

Syntax        public String **getIpAddress()**

Return value   IP address

**getIsBonded****Get pairing status**

Gets the status of pairing from the printer information found by **startDiscoveryPrinter**.  
Supported only by SLP721RT.

Syntax        public boolean **getIsBonded()**

Return value   true     Paired  
                 false    Not paired

**getDevicePath****Get device path**

Gets the character string of the USB device file path from the printer information found by **startDiscoveryPrinter**.

Syntax        public String **getDevicePath()**

Return value   Device path

### 4.3.5 PrinterIdentifier Class

**PrinterIdentifier** class stores the printer ID of the printer retrieved by **getPrinterResponse**.

#### (1) Method List

Printer model ID, type ID, ROM version ID, firmware version (main), manufacturer, model name, serial number, firmware version (boot), firmware checksum (boot), firmware checksum (main) and firmware checksum (main + boot) can be retrieved. Methods of **PrinterIdentifier** class are shown in the following table.

Name	Description
<b>getPrinterModelID</b>	Get printer model ID
<b>getTypeID</b>	Get type ID
<b>getRomVersionID</b>	Get ROM version ID
<b>getMainFirmwareVersion</b>	Get firmware version (main)
<b>getManufacturer</b>	Get manufacturer
<b>getModelName</b>	Get model name
<b>getSerialNumber</b>	Get serial number
<b>getBootFirmwareVersion</b>	Get firmware version (boot)
<b>getBootFirmwareChecksum</b>	Get firmware checksum (boot)
<b>getMainFirmwareChecksum</b>	Get firmware checksum (main)
<b>getFirmwareChecksum</b>	Get firmware checksum (main + boot)

#### (2) Method Details

##### **getPrinterModelID** Get printer model ID

Gets the printer model ID from the printer ID of the printer retrieved by **getPrinterResponse**.

Syntax      public byte **getPrinterModelID()**

Return value   Printer model ID

##### **getTypeID** Get type ID

Gets the type ID from the printer ID of the printer retrieved by **getPrinterResponse**.

Syntax      public byte **getTypeID()**

Return value   Type ID

##### **getRomVersionID** Get ROM version ID

Gets the ROM version ID from the printer ID of the printer retrieved by **getPrinterResponse**.

Syntax      public byte **getRomVersionID()**

Return value   ROM version ID

## **getMainFirmwareVersion**

## **Get firmware version (main)**

Gets the firmware version (main) as a string from the printer ID of the printer retrieved by **getPrinterResponse**.

Syntax      `public String getMainFirmwareVersion()`

Return value   Firmware version (main)

## **getManufacturer**

## **Get manufacturer**

Gets the manufacturer name as a string from the printer ID of the printer retrieved by **getPrinterResponse**.

Syntax      `public String getManufacturer()`

Return value   Manufacturer name

## **getModelName**

## **Get model name**

Gets the model name as a string from the printer ID of the printer retrieved by **getPrinterResponse**.

Syntax      `public String getModelName()`

Return value   Model name

## **getSerialNumber**

## **Get serial number**

Gets the serial number as a string from the printer ID of the printer retrieved by **getPrinterResponse**.

Syntax      `public String getSerialNumber()`

Return value   Serial number

## **getBootFirmwareVersion**

## **Get firmware version (boot)**

Gets the firmware version (boot) as a string from the printer ID of the printer retrieved by **getPrinterResponse**.

Syntax      `public String getBootFirmwareVersion()`

Return value   Firmware version (boot)

**getBootFirmwareChecksum**

Get firmware checksum (boot)

Gets the firmware checksum (boot) from the printer ID of the printer retrieved by **getPrinterResponse**.

Syntax        public byte[] **getBootFirmwareChecksum()**

Return value   Firmware checksum (boot)

**getMainFirmwareChecksum**

Get firmware checksum (main)

Gets the firmware checksum (main) from the printer ID of the printer retrieved by **getPrinterResponse**.

Syntax        public byte[] **getMainFirmwareChecksum()**

Return value   Firmware checksum (main)

**getFirmwareChecksum**

Get firmware checksum (main + boot)

Gets the firmware checksum (main + boot) from the printer ID of the printer retrieved by **getPrinterResponse**.

Syntax        public byte[] **getFirmwareChecksum()**

Return value   Firmware checksum (main + boot)

#### 4.3.6 PrinterException Class

##### (1) Method List

Methods provided by the **PrinterException** class are shown in the following table.

Name	Description
<b>PrinterException</b>	Constructor
<b>getErrorCode</b>	Get error code

##### (2) Constant List

###### ① Error code

Constants used for getting error codes are shown in following table.

Constant Name	Description	Value
<b>ERROR_ACCESS_DENIED</b>	Failed to get the handle.* <sup>1</sup>	-1
	An unavailable port was specified.	
	An unsupported method was specified.	
<b>ERROR_SHARING_VIOLATION</b>	An already opened port was specified.	-11
<b>ERROR_PORT_NOT_OPENED</b>	The port is not open.	-12
<b>ERROR_DEVICE_NOT_CONNECTED</b>	There is a problem with the connection between the Android device and printer.	-21
<b>ERROR_DEVICE_INITIALIZE_FAILED</b>	Failed to change the printer setting. Data sending to the printer is not completed within the send timeout period, or data receiving from the printer is not completed within the receive timeout period.	-31
<b>ERROR_DATA_SIZE_ZERO</b>	0-byte data was specified.	-101
<b>ERROR_OVER_MAX_DATA_SIZE</b>	Maximum data size is exceeded.	-102
<b>ERROR_ENCODE_FAILED</b>	An error occurred in encoding text data.* <sup>1</sup>	-111
<b>ERROR_TIMEOUT</b>	Send timeout occurred.	-201
	Receive timeout occurred.	
<b>ERROR_FILE_NOT_FOUND</b>	The specified file is not found.	-301
<b>ERROR_FILE_USED</b>	The specified file is being used by another process.	-302
<b>ERROR_FILE_INVALID</b>	The specified file is invalid.	-303
<b>ERROR_LOW_MEMORY</b>	Memory shortage occurred when loading image file.	-311
<b>ERROR_OVER_MAX_IMAGE</b>	Either or both of width and height of image file exceeds the number of printable maximum dots.	-312
<b>ERROR_LOGO_NOT_DEFINED</b>	The logo is not registered.	-313
<b>ERROR_LOW_USER_AREA</b>	Remaining user area is insufficient.	-401
<b>ERROR_LOW_EXTERNAL_RAM</b>	Remaining RAM capacity is insufficient.	-402
<b>ERROR_LABEL_FILE_NOT_SELECTED</b>	The label file is not selected.	-521
<b>ERROR_GET_LABEL_IMAGE</b>	Failed to create the label image.	-522

Constant Name	Description	Value
<b>ERROR_INVALID_PARAM</b>	The specified parameter is invalid.	-9999

\*1: Abnormal processing might have occurred.

### (3) Method Details

#### PrinterException

#### Constructor

Constructor for the **com.seikoinstruments.sdk.thermalprinter.PrinterException** class.

Syntax      `public PrinterException(int code, String message)`

#### getErrorCode

#### Get error codes

Gets the error code for thrown exception.

Syntax      `public int getErrorCode()`

Return value    See "4.3.6(2) Constant List" for details of the error.



#### 4.3.7 CallbackFunctionListener Interface

**CallbackFunctionListener** interface is an interface for getting the change event of printer status.

##### (1) Method List

Method of **CallbackFunctionListener** interface is shown in the following table.

Name	Description
<b>onStatusChanged</b>	Change event of printer status

##### (2) Method Details

<b>onStatusChanged</b>	Change event of printer status
------------------------	--------------------------------

Syntax      `public void onStatusChanged(int status)`

Parameter    *status*                      Printer status

Description   This method is called at the following timing.  
                  ·When **setCallbackFunctionListener** is executed.  
                  ·When the printer status is changed.

The change event of printer status is notified when **isConnect** is true.

This method is an interface, so it is not implemented.  
Implement the optional process in the class that receives a callback of the printer status change.

Do not execute the APIs of **PrinterManager** within this method.

### **4.3.8 BarcodeScannerListener Interface**

**BarcodeScannerListener** interface is an interface for the barcode scanner connection, barcode scanner disconnection, or received barcode data obtaining.

SLP720RT/SLP721RT do not support this interface.

### 4.3.9 SmartLabelManager Class

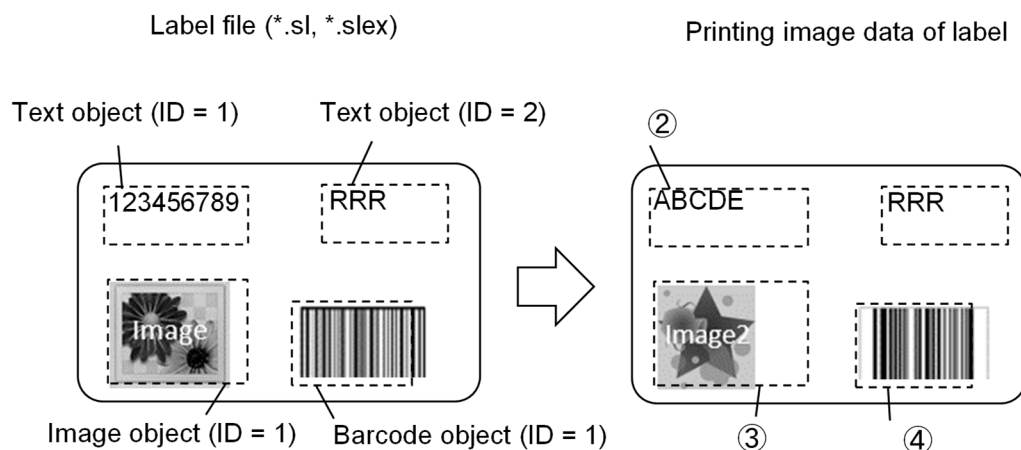
**SmartLabelManager** class provides the function to convert the label file (\*.sl, \*.slex) created using the app into the printable data from the printer.

#### (1) Method List

Methods provided by the **SmartLabelManager** class are shown in the following table.

Name	Description
<b>SmartLabelManager</b>	Constructor
<b>selectSmartLabelFile</b>	Specify label file
<b>replaceSmartLabelTextData</b>	Replace text data of label
<b>replaceSmartLabelImageData</b>	Replace image data of label
<b>replaceSmartLabelBarcodeData</b>	Replace barcode data of label

The example of the procedure for replacing and printing data using the label file is described below.



#### ① Specify a label file to print or replace data.

```
smartLabelManager.selectSmartLabelFile(labelFilePath);
```

#### ② Replace text data.

```
smartLabelManager.replaceSmartLabelTextData(1, "ABCDE");
```

#### ③ Replace image data.

```
smartLabelManager.replaceSmartLabelImageData(1, bitmap1);
```

#### ④ Replace barcode data.

```
smartLabelManager.replaceSmartLabelBarcodeData(1, "123456789");
```

#### ⑤ Print labels.

```
printerManager.printSmartLabelImageData(smartLabelManager);
```

**SmartLabelManager****Constructor**

Constructor for **com.seikoinstruments.sdk.thermalprinter.SmartLabelManager** class.

Syntax      `public SmartLabelManager(Context context)`

Parameter    *context*                      Specify application context to call this method.  
Example: **MainActivity.this**

**selectSmartLabelFile****Specify label file**

Specifies a label file (\*.sl, \*.slex).

Syntax      `public void selectSmartLabelFile(String filePath)` throws **PrinterException**

Parameter    *filePath*                      File path of label file (\*.sl, \*.slex) to use (\*.sl is deprecated.)  
The formats that can be entered are described below.

- Absolute path string handled by Java standard class "java.io.File"  
When the application targets Android 10 (API 29) or later, please note that some files cannot be handled directly.  
See "3.5 Precautions - About Scoped Storage" for details.
- URI string of the following scheme name handled by the class "android.net.Uri" prepared for Android
  - file://
  - content://
 It is necessary for this parameter to specify the URI string obtained from "Storage Access Framework". Please note that URI created without obtaining the URI string from "Storage Access Framework" may not be able to open the file.

Exception    **PrinterException**  
**PrinterException** is thrown when an error occurs while this method is being called.  
See "**4.3.6 PrinterException Class**" for details of the error.

Description    The specified label file (\*.sl, \*.slex) is retained internally.  
After specifying the label file, the data of each object can be replaced.

The label files that can be used are restricted. See "4.1.1 Structure of Label File" for restrictions.

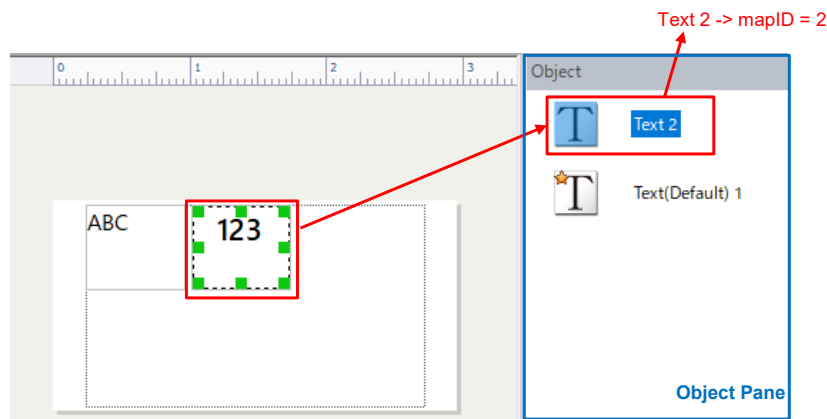
Note            The label files (\*.sl) are label file that will not be supported in the future.  
Use label files (\*.slex) that can be created using SII Layout Editor (app version 1.5.0 or later).

**replaceSmartLabelTextData****Replace text data of label**

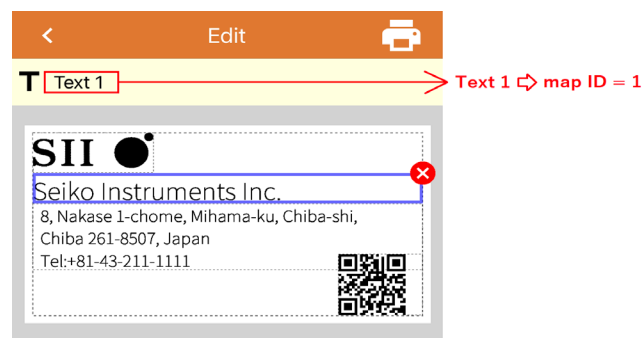
Replaces the value of the text object of the label file (\*.sl, \*.slex).

Syntax      `public void replaceSmartLabelTextData(int mapID, String text)` throws **PrinterException**

Parameter    *mapID*                      ID of the text object  
Specify the ID of the text object mapped on the label file (\*.sl, \*.slex) of the app. The ID of the text object can be confirmed on the UI display of the app.  
When the specified *mapID* is not defined in the selected label, it is ignored.



UI display of Smart Label Creator



UI display of SII Layout Editor

*text* Text data to replace

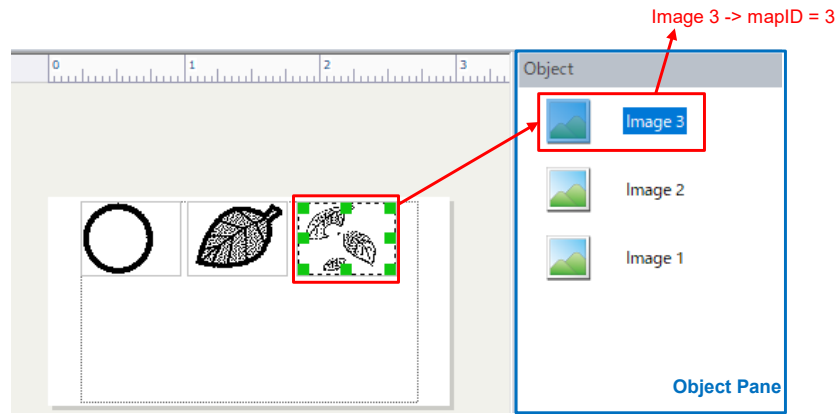
**Exception** **PrinterException**  
**PrinterException** is thrown when an error occurs while this method is being called.  
 See "4.3.6 PrinterException Class" for details of the error.

## replaceSmartLabelImageData Replace image data of label

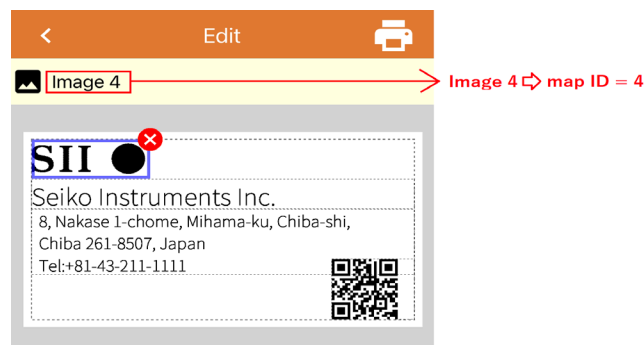
Replaces the value of the image object of the label file (\*.sl, \*.slex).

**Syntax** `public void replaceSmartLabelImageData(int mapID, Bitmap bitmap) throws PrinterException`

**Parameter** *mapID* ID of the image object  
 Specify the ID of the image object mapped on the label file (\*.sl, \*.slex) of the app. The ID of the image object can be confirmed on the UI display of the app.  
 When the specified *mapID* is not defined in the selected label, it is ignored.



UI display of Smart Label Creator



UI display of SII Layout Editor

*bitmap*

Image data to replace  
Specify image data conforming to the Android class  
"android.graphics.Bitmap".

Exception **PrinterException**

**PrinterException** is thrown when an error occurs while this method is being called.  
See "**4.3.6 PrinterException Class**" for details of the error.

## replaceSmartLabelBarcodeData

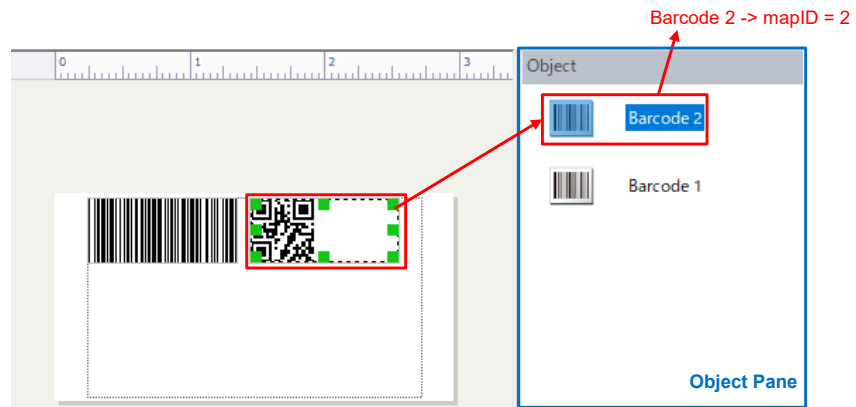
Replace barcode data of label

Replaces the value of the barcode object of the label file (\*.sl, \*.slex).

Syntax `public void replaceSmartLabelBarcodeData(int mapID, String text) throws PrinterException`

Parameter *mapID*

ID of the barcode object  
Specify the ID of the barcode object mapped on the label file (\*.sl, \*.slex) of the app. The ID of the barcode object can be confirmed on the UI display of the app.  
When the specified *mapID* is not defined in the selected label, it is ignored.



UI display of Smart Label Creator



UI display of SII Layout Editor

*text*

Text data to replace

Even if the text data to be replaced is invalid barcode data, an error is not caused. Make sure that the barcode data is valid before specifying it.

#### Exception **PrinterException**

**PrinterException** is thrown when an error occurs while this method is being called. See "**4.3.6 PrinterException Class**" for details of the error.

## Chapter 5

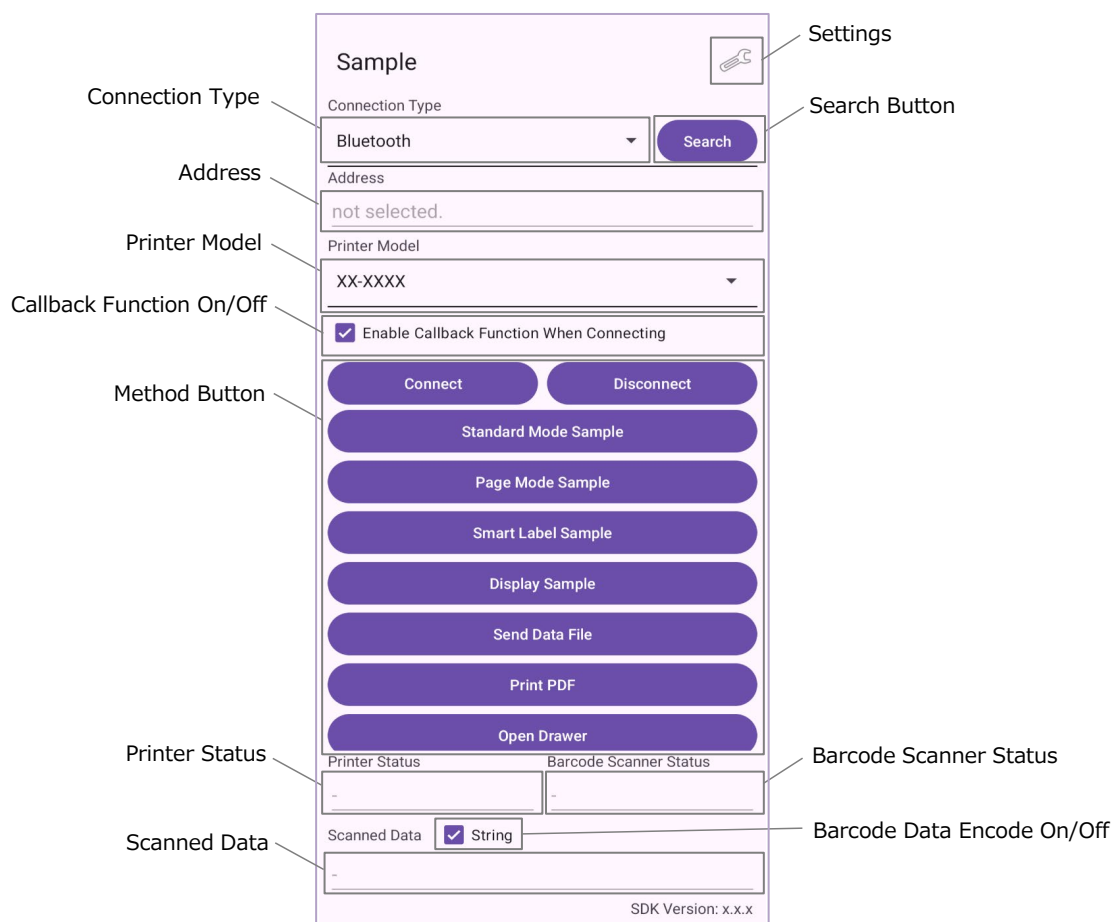
### Sample Program

This chapter describes the sample program provided by SII print class library.


#### 5.1 Screen Layout

SII print class library includes the sample program in Android Studio project format.  
This section describes the screen of the sample program.

##### 5.1.1 Main Screen



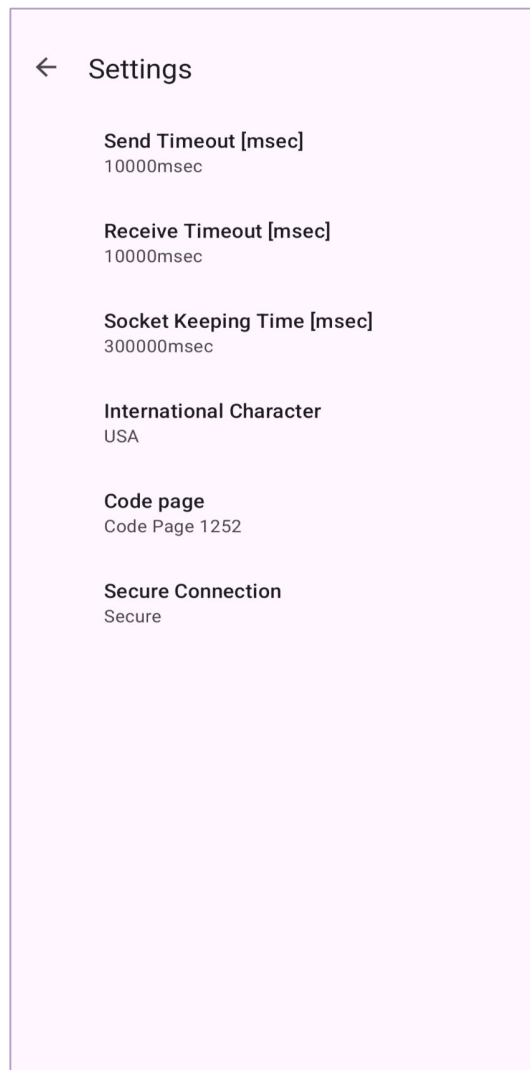


Item	Description
Settings	Tapping the [Settings] button opens the function setting screen. In order to go back to the main screen, tap  button on the top left of the screen.
Connection type	Selects the connection type to the printer.
Search Button	Starts searching for the type of printer specified in [Connection Type]. Transits to the printer search view. A list of the searched printer is displayed. The printer is selected by tapping the searched printer and returns to the main view.
Address	Displays the information about the selected printer.
Printer Model	Specifies the printer model.
Callback Function On/Off	Select whether to enable the callback function when connecting to the printer. On: Starts the callback function when connecting. Off: The callback function does not respond.
Method Button* <sup>1</sup>	In addition to the method buttons for executing <b>connect</b> and <b>disconnect</b> , the sample by the combination of some methods can be printed and checked for the operation of peripheral devices.
Printer Status	Displays the printer status. When [Callback Function On/Off] is On, the latest printer status is displayed.
Barcode Scanner Status	Displays the connection status of the barcode scanner. SLP720RT/SLP721RT do not support the barcode scanner.
Barcode Data Encode On/Off	Selects the conversion of barcode data read by the barcode scanner. SLP720RT/SLP721RT do not support the barcode scanner.
Scanned Data	Displays the barcode data read by the barcode scanner. SLP720RT/SLP721RT do not support the barcode scanner.

\*1: Supported functions vary by model. Only supported functions can be operated.

### 5.1.2 [Settings] Screen

Various setting functions are displayed in [Settings].



## 5.2 Precaution

The sample program is subject to change without notice.

No guarantee of proper operation and support are provided for the sample program.

## Appendix A

### Character Set

#### A.1 Codepage Table (Character Code Table)

The codepages when **COUNTRY\_USA** is set for the international character set are shown below. Print results of the specific character codes vary depending on the setting of the international character set. See "A.2 International Character Set" for the specific character codes.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20		!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	φ	£	¥	℔	ƒ
A0	á	í	ó	ú	ñ	Ñ	ä	ö	¿	¬	½	¼	¿	»	«	»
B0	☐	☐	☐		†	‡	§	¶	§	¶	§	¶	§	¶	§	¶
C0	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ
D0	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ	ℒ
E0	α	β	Γ	π	Σ	σ	μ	τ	φ	θ	Ω	δ	∞	φ	ε	Π
F0	≡	±	≥	≤		J	÷	≈	°	•	•	√	n	2	■	■

Figure A-1 CODE\_PAGE\_437 (USA, Standard Europe)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80																
90																
A0	。	「	」	、	・	ヲ	ア	イ	ウ	エ	オ	ヤ	ユ	ヨ	ッ	
B0	ー	ア	イ	ウ	エ	オ	カ	キ	ク	ケ	コ	サ	シ	ス	セ	ソ
C0	タ	チ	ツ	テ	ト	ナ	ニ	ヌ	ネ	ノ	ハ	ヒ	フ	ヘ	ホ	マ
D0	ミ	ム	メ	モ	ヤ	ユ	ヨ	ラ	リ	ル	レ	ロ	ワ	ン	ゝ	。
E0																
F0																

Figure A-2 CODE\_PAGE\_KATAKANA

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	Ç	ü	é	â	ä	à	â	ç	ê	ë	è	ï	î	ì	Ä	Å
90	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	×	f
A0	á	í	ó	ú	ñ	Ñ	ä	ö	¿	®	¬	½	¼	¡	«	»
B0	☐	☐	☐			Á	Â	À	©	¶	¶	¶	¶	¶	¥	₱
C0	L	⊥	⊥	⊥	⊥	⊥	ã	Ã	ℓ	ℓ	ℓ	ℓ	ℓ	ℓ	=	ℓ
D0	ð	Đ	Ê	Ë	È	Í	Î	Ï	⌋	⌋	■	■	■	■	■	■
E0	ó	β	ô	ò	õ	õ	μ	þ	þ	ú	û	ù	ý	ý	-	'
F0	-	±	=	¾	¶	§	÷	,	°	..	.	1	3	2	■	

Figure A-3 CODE\_PAGE\_850 (Multilingual)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	Ç	ü	é	â	ã	à	Á	ç	ê	Ê	è	Í	Ô	ì	Ã	Â
90	É	À	È	ô	õ	ò	Ú	ù	Ì	Õ	Ü	¢	£	Ù	Þ	Ó
A0	á	í	ó	ú	ñ	Ñ	ä	ö	ï	ò	¬	½	¼	¿	«	»
B0	☐	☐	☐													
C0	L	L	T		-	+	+	+	+	+	+	+	+	+	+	+
D0	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌
E0	α	β	Γ	π	Σ	σ	μ	τ	φ	θ	Ω	δ	∞	φ	ε	Π
F0	≡	±	≥	≤		J	÷	≈	°	•	•	√	n	2	■	

Figure A-4 CODE\_PAGE\_860 (Portuguese)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	Ç	ü	é	â	À	à	¶	ç	ê	ë	è	ï	î	≡	À	§
90	É	È	Ê	ô	Ë	Ï	Ô	Ù	⊗	Ô	Ü	¢	£	Ù	Ù	f
A0	í	ó	ú	¨	³	-	î	¬	¬	½	¼	¾	«	»		
B0	☐	☐	☐													
C0	L	L	T		-	+	+	+	+	+	+	+	+	+	+	+
D0	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌	⌌
E0	α	β	Γ	π	Σ	σ	μ	τ	φ	θ	Ω	δ	∞	φ	ε	Π
F0	≡	±	≥	≤		J	÷	≈	°	•	•	√	n	2	■	

Figure A-5 CODE\_PAGE\_863 (Canadian-French)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	Pt	f
A0	á	í	ó	ú	ñ	Ñ	ä	ö	¿	¬	½	¼	¡	«	»	
B0	☐	☐	☐		†	‡	§	¶	§		¶		¶		¶	
C0	L	⊥	T	└	├	┤	┥	┦	┧	┨	┩	┪	┫	┬	┴	┴
D0	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥
E0	α	β	Γ	π	Σ	σ	μ	τ	φ	θ	Ω	δ	∞	φ	ε	Π
F0	≡	±	≥	≤	∫	J	÷	≈	°	•	•	√	n	2	■	

Figure A-6 CODE\_PAGE\_865 (Nordic)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	Ç	ü	é	â	ä	à	å	ç	ê	ë	è	ï	î	ì	Ä	Å
90	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	Ş	ş
A0	á	í	ó	ú	ñ	Ñ	Ğ	ğ	¿	®	¬	½	¼	¡	«	»
B0	☐	☐	☐		†	‡	§	¶	§		¶		¶		¶	
C0	L	⊥	T	└	├	┤	┥	┦	┧	┨	┩	┪	┫	┬	┴	┴
D0	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥
E0	ó	β	ô	ò	õ	õ	μ	×	ú	û	ü	ì	ÿ	-	'	
F0	-	±	¾	¶	§	÷	•	•	•	•	•	•	•	•	•	■

Figure A-7 CODE\_PAGE\_857 (Turkish)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	A	B	Γ	Δ	E	Z	H	Θ	I	K	Λ	M	N	Ξ	O	Π
90	P	Σ	T	Υ	Φ	X	Ψ	Ω	α	β	γ	δ	ε	ζ	η	θ
A0	ι	κ	λ	μ	ν	ξ	ο	π	ρ	σ	ς	τ	υ	φ	χ	ψ
B0	⋈	⋈	⋈		†	‡		π	‡			π			‡	‡
C0	L	⊥	T	†	†	†	†	†	†	†	†	†	†	†	†	†
D0	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥	⊥
E0	ω	ά	έ	ή	ϊ	ί	ό	ύ	ϋ	ώ	Ά	Έ	Ή	Ί	Ό	Υ
F0	Ω	±	≥	≤	İ	ÿ	÷	≈	°	•	•	√	n	2	■	

Figure A-8 CODE\_PAGE\_737 (Greek)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	€	‚	ƒ	„	…	†	‡	^	‰	Š	<	Œ		Ž		
90		‘	’	“	”	•	-	-	~	™	š	>	œ		ž	ÿ
A0		ı	¢	£	¤	¥	¦	§	¨	©	ª	«	¬	®	¯	
B0	°	±	²	³	´	µ	¶	·		¹	º	»	¼	½	¾	¿
C0	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D0	Ð	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	Ý	Þ	ß
E0	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F0	ð	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ý	þ	ÿ

Figure A-9 CODE\_PAGE\_1252 (Latin)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
90	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
A0	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
B0	␣	␣	␣													
C0	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
D0	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣	␣
E0	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я
F0	Ё	ё	Є	є	İ	ı	Ÿ	ÿ	°	•	•	√	№	α	■	

Figure A-10 CODE\_PAGE\_866 (Russian)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	Ç	ü	é	â	ä	û	ç	ł	ë	ő	ö	î	ž	Ä	Ć	
90	É	Í	í	ô	ö	Ł	ł	Ś	ś	Ö	Ü	Ť	ť	Ł	×	č
A0	á	í	ó	ú	À	à	Ž	ž	Ę	ę	¬	ž	Č	š	«	»
B0	␣	␣	␣			Á	Â	Ě	Š					Ž	ž	ı
C0	␣	␣	␣	␣	␣	Ä	ä	Ł	ł	Ł	ł	Ł	ł	Ł	Ł	α
D0	đ	Đ	Ď	Ě	ď	Ň	í	î	ě	ı	ı	ı	ı	ı	ı	ı
E0	ó	ß	ô	ń	ň	š	š	ř	ú	ř	ú	ý	ý	ı	ı	ı
F0	-	"	˘	˘	˘	§	÷	˚	˚	˚	˚	Ú	Ř	ř	■	

Figure A-11 CODE\_PAGE\_852 (Eastern Europe)



	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	Ç	ü	é	â	ä	à	â	ç	ê	ë	è	ï	î	ì	Ä	Å
90	É	æ	Æ	ô	ö	ò	û	ù	ÿ	Ö	Ü	ø	£	Ø	×	f
A0	á	í	ó	ú	ñ	Ñ	ä	ö	¿	®	¬	½	¼	¡	«	»
B0	☐	☐	☐			Á	Â	Ã	©			¶	¶	¢	¥	₱
C0	L	⊥	T	└	└	└	ã	Ã	ℓ	ℓ	ℓ	ℓ	ℓ	=	ℓ	α
D0	ð	Ð	Ê	Ë	È	€	Í	Î	Ï	Ј	Г	■	■	І	İ	■
E0	ó	β	ô	ò	õ	õ	μ	þ	þ	ú	û	ü	ý	ý	-	'
F0	-	±	=	¾	¶	§	÷	,	°	..	.	1	3	2		■

Figure A-12 CODE\_PAGE\_858 (Euro)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	ђ	Ђ	ѓ	Ѓ	ё	Ё	є	Є	ѕ	Ѕ	і	І	ї	Ї	ј	Ј
90	љ	Љ	њ	Њ	ћ	Ћ	ќ	Ќ	џ	Џ	џ	џ	џ	џ	џ	џ
A0	а	А	б	Б	в	В	г	Г	д	Д	е	Е	ф	Ф	г	Г
B0	☐	☐	☐			x	X	и	И			¶	¶	й	Й	₱
C0	L	⊥	T	└	└	└	к	К	ℓ	ℓ	ℓ	ℓ	ℓ	=	ℓ	α
D0	л	Л	м	М	н	Н	о	О	п	П	г	■	■	П	я	■
E0	Я	р	Р	с	С	т	Т	у	У	ж	Ж	в	В	ь	ь	№
F0	-	ы	Ы	э	Э	ш	Ш	э	Э	щ	Щ	ч	Ч	§		■

Figure A-13 CODE\_PAGE\_855 (Cyrillic)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	°	•	•	√	■	-		+	+	+	+	+	+	+	+	+
90	β	∞	φ	±	½	¼	≈	«	»	لأ	لأ					لا
A0	-	£	£	£	£			ل	ب	ث	ج	ح	خ	ح	خ	خ
B0	•	١	٢	٣	٤	٥	٦	٧	٨	٩	ف	س	ش	ص	ش	؟
C0	φ	ء	آ	أ	ؤ	ع	ئ	ب	ة	ث	ج	ح	خ	د	خ	د
D0	ذ	ر	ز	س	ش	ص	ض	ط	ظ	ع	غ		÷	×	ع	
E0	-	ف	ق	ك	ل	م	ن	ه	و	ي	ض	ع	غ	م	غ	م
F0	-	ن	ه	و	ي	ي	ي	ي	ي	ي	ي	ي	ي	ي	ي	■

Figure A-14 CODE\_PAGE\_864 (Arabic)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	€	‘	’	“	”	…	†	‡	§	Š	<	Š	Ť	Ž	Ž	
90		‘	’	“	”	•	-	-	™	š	>	š	ť	ž	ž	
A0	˘	˘	Ł	Ł	Ą		Ś	..	©	§	«	¬	¬	®	Ž	
B0	°	±	ł	ł	μ	¶	•	•	•	•	»	Ł	”	Ł	ž	
C0	Ř	Á	Ā	Ā	Ā	Ā	Ā	Ā	Ā	Ā	Ā	Ā	Ā	Ā	Ā	Ā
D0	Đ	Ň	Ň	Ó	Ô	Ö	Ö	×	Ř	Ů	Ú	Ú	Ú	Ú	Ý	Ť
E0	ř	á	â	ä	ä	í	ć	ç	č	é	ę	ě	ě	í	î	ď
F0	đ	ň	ň	ó	ô	ö	÷	ř	ů	ú	ú	ú	ú	ý	ť	·

Figure A-15 CODE\_PAGE\_1250 (Central European)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	ђ	ѓ	;	ѓ	„	...	†	‡	€	‰	Љ	<	Њ	ќ	ћ	џ
90	ђ	‘	;	“	”	•	-	-	™	Љ	>	њ	ќ	ћ	џ	
A0	ÿ	ÿ	Ј	Ѡ	Г	І	Ѕ	Ё	©	©	«	¬	-	®	İ	
B0	°	±	І	і	г	μ	¶	•	ё	№	е	»	ј	Ѕ	ѕ	ї
C0	А	Б	В	Г	Д	Е	Ж	З	И	Й	К	Л	М	Н	О	П
D0	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э	Ю	Я
E0	а	б	в	г	д	е	ж	з	и	й	к	л	м	н	о	п
F0	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э	ю	я

Figure A-16 CODE\_PAGE\_1251 (Cyrillic)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	€	‘	;	ƒ	„	...	†	‡	‰		<					
90		‘	;	“	”	•	-	-	™		>					
A0	ˆ	ˆ	ˆ	ˆ	ˆ	ˆ	ˆ	ˆ	ˆ	ˆ	ˆ	ˆ	ˆ	ˆ	ˆ	ˆ
B0	°	±	²	³	´	μ	¶	•	ˆ	ˆ	ˆ	ˆ	ˆ	ˆ	ˆ	ˆ
C0	ı	Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο
D0	Π	Ρ		Σ	Τ	Υ	Φ	Χ	Ψ	Ω	İ	ÿ	ά	έ	ή	ί
E0	ˆ	α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	ο
F0	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω	ı	ÿ	ό	ύ	ώ	

Figure A-17 CODE\_PAGE\_1253 (Greek)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{		}	~	
80	€	‚	ƒ	„	…	†	‡	^	‰	Š	‹	Œ				
90	‘	’	“	”	•	-	-	~	™	š	›	œ			ÿ	
A0	ı	ϕ	£	¤	¥	¦	§	¨	©	ª	«	¬	®	¯		
B0	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿
C0	À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï
D0	Ğ	Ñ	Ò	Ó	Ô	Õ	Ö	×	Ø	Ù	Ú	Û	Ü	İ	Ş	ß
E0	à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï
F0	ğ	ñ	ò	ó	ô	õ	ö	÷	ø	ù	ú	û	ü	ı	ş	ÿ

Figure A-18 CODE\_PAGE\_1254 (Turkish)

## A.2 International Character Set

Print results of the specific character codes vary depending on the setting of the international character set.

The following table shows the specific character codes and their print results.

	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
COUNTRY_USA	#	\$	@	[	\	]	^	`	{		}	~
COUNTRY_FRANCE	#	\$	à	°	ç	§	^	`	é	ù	è	..
COUNTRY_GERMANY	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
COUNTRY_ENGLAND	£	\$	@	[	\	]	^	`	{		}	~
COUNTRY_DENMARK_1	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~
COUNTRY_SWEDEN	#	α	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
COUNTRY_ITALY	#	\$	@	°	\	é	^	ù	à	ò	è	ì
COUNTRY_SPAIN	ℙ	\$	@	ı	Ñ	ı	^	`	..	ñ	}	~
COUNTRY_JAPAN	#	\$	@	[	¥	]	^	`	{		}	~
COUNTRY_NORWAY	#	α	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
COUNTRY_DENMARK_2	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
COUNTRY_SPAIN_2	#	\$	á	ı	Ñ	ı	é	`	í	ñ	ó	ú
COUNTRY_LATIN_AMERICA	#	\$	á	ı	Ñ	ı	é	ü	í	ñ	ó	ú
COUNTRY_ARABIA	#	\$	@	[	\	]	^	`	{		}	~

Figure A-19 International Character Set

## Appendix B

### Barcode Size List

#### B.1 Barcode Size List

##### B.1.1 printBarcode



##### (1) Height of the barcode image

<i>hriFont</i>	<i>hriPosition</i>	Length from Top of Barcode to Reference Point	Height of Barcode Image
FONT_A	HRI_NONE	<i>moduleHeight</i>	<i>moduleHeight</i>
	HRI_POSITION_ABOVE	<i>moduleHeight</i> + 32	<i>moduleHeight</i> + 32
	HRI_POSITION_BELOW	<i>moduleHeight</i>	<i>moduleHeight</i> + 32
	HRI_POSITION_ABOVE_BELOW	<i>moduleHeight</i> + 64	<i>moduleHeight</i> + 64
FONT_B	HRI_NONE	<i>moduleHeight</i>	<i>moduleHeight</i>
	HRI_POSITION_ABOVE	<i>moduleHeight</i> + 24	<i>moduleHeight</i> + 24
	HRI_POSITION_BELOW	<i>moduleHeight</i>	<i>moduleHeight</i> + 24
	HRI_POSITION_ABOVE_BELOW	<i>moduleHeight</i> + 48	<i>moduleHeight</i> + 48

(2) Width of the barcode image

<i>barcodeSymbol</i>	<i>moduleSize</i>	Width of Barcode Image
BARCODE_UPC_A	BARCODE_MODULE_WIDTH_2	190
	BARCODE_MODULE_WIDTH_3	285
	BARCODE_MODULE_WIDTH_4	380
	BARCODE_MODULE_WIDTH_5	475
	BARCODE_MODULE_WIDTH_6	570
BARCODE_UPC_E	BARCODE_MODULE_WIDTH_2	102
	BARCODE_MODULE_WIDTH_3	153
	BARCODE_MODULE_WIDTH_4	204
	BARCODE_MODULE_WIDTH_5	255
	BARCODE_MODULE_WIDTH_6	306
BARCODE_EAN13	BARCODE_MODULE_WIDTH_2	190
	BARCODE_MODULE_WIDTH_3	285
	BARCODE_MODULE_WIDTH_4	380
	BARCODE_MODULE_WIDTH_5	475
	BARCODE_MODULE_WIDTH_6	570
BARCODE_JAN13	BARCODE_MODULE_WIDTH_2	190
	BARCODE_MODULE_WIDTH_3	285
	BARCODE_MODULE_WIDTH_4	380
	BARCODE_MODULE_WIDTH_5	475
	BARCODE_MODULE_WIDTH_6	570
BARCODE_EAN8	BARCODE_MODULE_WIDTH_2	134
	BARCODE_MODULE_WIDTH_3	201
	BARCODE_MODULE_WIDTH_4	268
	BARCODE_MODULE_WIDTH_5	335
	BARCODE_MODULE_WIDTH_6	402
BARCODE_JAN8	BARCODE_MODULE_WIDTH_2	134
	BARCODE_MODULE_WIDTH_3	201
	BARCODE_MODULE_WIDTH_4	268
	BARCODE_MODULE_WIDTH_5	335
	BARCODE_MODULE_WIDTH_6	402
BARCODE_CODE93	BARCODE_MODULE_WIDTH_2	18 × number of barcode data + 56
	BARCODE_MODULE_WIDTH_3	27 × number of barcode data + 84
	BARCODE_MODULE_WIDTH_4	36 × number of barcode data + 112
	BARCODE_MODULE_WIDTH_5	45 × number of barcode data + 140
	BARCODE_MODULE_WIDTH_6	54 × number of barcode data + 168

<i>barcodeSymbol</i>	<i>moduleSize</i>	<b>Width of Barcode Image</b>
<b>BARCODE_CODE128</b>	<b>BARCODE_MODULE_WIDTH_2</b>	22 × number of barcode data + 26
	<b>BARCODE_MODULE_WIDTH_3</b>	33 × number of barcode data + 39
	<b>BARCODE_MODULE_WIDTH_4</b>	44 × number of barcode data + 52
	<b>BARCODE_MODULE_WIDTH_5</b>	55 × number of barcode data + 65
	<b>BARCODE_MODULE_WIDTH_6</b>	66 × number of barcode data + 78
<b>BARCODE_GS1_OMNI_DIRECTIONAL</b>	<b>BARCODE_MODULE_WIDTH_2</b>	192
	<b>BARCODE_MODULE_WIDTH_3</b>	288
	<b>BARCODE_MODULE_WIDTH_4</b>	384
	<b>BARCODE_MODULE_WIDTH_5</b>	480
	<b>BARCODE_MODULE_WIDTH_6</b>	576
<b>BARCODE_GS1_TRUNCATED</b>	<b>BARCODE_MODULE_WIDTH_2</b>	192
	<b>BARCODE_MODULE_WIDTH_3</b>	288
	<b>BARCODE_MODULE_WIDTH_4</b>	384
	<b>BARCODE_MODULE_WIDTH_5</b>	480
	<b>BARCODE_MODULE_WIDTH_6</b>	576
<b>BARCODE_GS1_LIMITED</b>	<b>BARCODE_MODULE_WIDTH_2</b>	158
	<b>BARCODE_MODULE_WIDTH_3</b>	237
	<b>BARCODE_MODULE_WIDTH_4</b>	316
	<b>BARCODE_MODULE_WIDTH_5</b>	395
	<b>BARCODE_MODULE_WIDTH_6</b>	474
<b>BARCODE_GS1_EXPANDED<sup>*1</sup></b>	<b>BARCODE_MODULE_WIDTH_2</b>	number of barcode module × 2
	<b>BARCODE_MODULE_WIDTH_3</b>	number of barcode module × 3
	<b>BARCODE_MODULE_WIDTH_4</b>	number of barcode module × 4
	<b>BARCODE_MODULE_WIDTH_5</b>	number of barcode module × 5
	<b>BARCODE_MODULE_WIDTH_6</b>	number of barcode module × 6

\*1: The number of barcode module is determined by the barcode data to be specified.



<i>barcodeSymbol</i>	<i>nwRatio</i>	<i>moduleSize</i>	<b>Width of Barcode Image</b>
<b>BARCODE_CODE39</b>	<b>NWRATIO_1TO2</b>	<b>BARCODE_MODULE_WIDTH_2</b>	26 × number of barcode data + 50
		<b>BARCODE_MODULE_WIDTH_3</b>	39 × number of barcode data + 75
		<b>BARCODE_MODULE_WIDTH_4</b>	52 × number of barcode data + 100
		<b>BARCODE_MODULE_WIDTH_5</b>	65 × number of barcode data + 125
		<b>BARCODE_MODULE_WIDTH_6</b>	78 × number of barcode data + 150
	<b>NWRATIO_1TO2_5</b>	<b>BARCODE_MODULE_WIDTH_2</b>	29 × number of barcode data + 56
		<b>BARCODE_MODULE_WIDTH_3</b>	45 × number of barcode data + 87
		<b>BARCODE_MODULE_WIDTH_4</b>	58 × number of barcode data + 112
		<b>BARCODE_MODULE_WIDTH_5</b>	74 × number of barcode data + 143
		<b>BARCODE_MODULE_WIDTH_6</b>	87 × number of barcode data + 168
	<b>NWRATIO_1TO3</b>	<b>BARCODE_MODULE_WIDTH_2</b>	32 × number of barcode data + 62
		<b>BARCODE_MODULE_WIDTH_3</b>	48 × number of barcode data + 93
		<b>BARCODE_MODULE_WIDTH_4</b>	64 × number of barcode data + 124
		<b>BARCODE_MODULE_WIDTH_5</b>	80 × number of barcode data + 155
		<b>BARCODE_MODULE_WIDTH_6</b>	96 × number of barcode data + 186
<b>BARCODE_ITF</b>	<b>NWRATIO_1TO2</b>	<b>BARCODE_MODULE_WIDTH_2</b>	14 × number of barcode data + 16
		<b>BARCODE_MODULE_WIDTH_3</b>	21 × number of barcode data + 24
		<b>BARCODE_MODULE_WIDTH_4</b>	28 × number of barcode data + 32
		<b>BARCODE_MODULE_WIDTH_5</b>	35 × number of barcode data + 40
		<b>BARCODE_MODULE_WIDTH_6</b>	42 × number of barcode data + 48
	<b>NWRATIO_1TO2_5</b>	<b>BARCODE_MODULE_WIDTH_2</b>	16 × number of barcode data + 17
		<b>BARCODE_MODULE_WIDTH_3</b>	25 × number of barcode data + 26
		<b>BARCODE_MODULE_WIDTH_4</b>	32 × number of barcode data + 34

<i>barcodeSymbol</i>	<i>nwRatio</i>	<i>moduleSize</i>	<b>Width of Barcode Image</b>
<b>PM_BARCODE_ITF</b>	<b>NWRATIO_1TO2_5</b>	<b>BARCODE_MODULE_WIDTH_5</b>	41 × number of barcode data + 43
		<b>BARCODE_MODULE_WIDTH_6</b>	48 × number of barcode data + 51
	<b>NWRATIO_1TO3</b>	<b>BARCODE_MODULE_WIDTH_2</b>	18 × number of barcode data + 18
		<b>BARCODE_MODULE_WIDTH_3</b>	27 × number of barcode data + 27
		<b>BARCODE_MODULE_WIDTH_4</b>	36 × number of barcode data + 36
		<b>BARCODE_MODULE_WIDTH_5</b>	45 × number of barcode data + 45
<b>BARCODE_CODABAR*1</b>	<b>NWRATIO_1TO2</b>	<b>BARCODE_MODULE_WIDTH_2</b>	20 × number of data + 2 × (2 + number of wide data) - 2
		<b>BARCODE_MODULE_WIDTH_3</b>	30 × number of data + 3 × (2 + number of wide data) - 3
		<b>BARCODE_MODULE_WIDTH_4</b>	40 × number of data + 4 × (2 + number of wide data) - 4
		<b>BARCODE_MODULE_WIDTH_5</b>	50 × number of data + 5 × (2 + number of wide data) - 5
		<b>BARCODE_MODULE_WIDTH_6</b>	60 × number of data + 6 × (2 + number of wide data) - 6
	<b>NWRATIO_1TO2_5</b>	<b>BARCODE_MODULE_WIDTH_2</b>	22 × number of data + 3 × (2 + number of wide data) - 2
		<b>BARCODE_MODULE_WIDTH_3</b>	34 × number of data + 5 × (2 + number of wide data) - 3
		<b>BARCODE_MODULE_WIDTH_4</b>	44 × number of data + 6 × (2 + number of wide data) - 4
		<b>BARCODE_MODULE_WIDTH_5</b>	56 × number of data + 8 × (2 + number of wide data) - 5
		<b>BARCODE_MODULE_WIDTH_6</b>	66 × number of data + 9 × (2 + number of wide data) - 6
	<b>NWRATIO_1TO3</b>	<b>BARCODE_MODULE_WIDTH_2</b>	24 × number of data + 4 × (2 + number of wide data) - 2
		<b>BARCODE_MODULE_WIDTH_3</b>	36 × number of data + 6 × (2 + number of wide data) - 3
		<b>BARCODE_MODULE_WIDTH_4</b>	48 × number of data + 8 × (2 + number of wide data) - 4
		<b>BARCODE_MODULE_WIDTH_5</b>	60 × number of data + 10 × (2 + number of wide data) - 5
		<b>BARCODE_MODULE_WIDTH_6</b>	72 × number of data + 12 × (2 + number of wide data) - 6

\*1: The number of data is the number of all characters except for the start and stop characters.  
The wide data is the number of " : / . + ".

<i>barcodeSymbol</i>	<b>Number of Data</b>	<i>moduleSize</i>	<b>Width of Barcode Image</b>
<b>BARCODE_EAN13_ADDON</b>	14 or 15	<b>BARCODE_MODULE_WIDTH_2</b>	244
		<b>BARCODE_MODULE_WIDTH_3</b>	366
		<b>BARCODE_MODULE_WIDTH_4</b>	488
		<b>BARCODE_MODULE_WIDTH_5</b>	610
		<b>BARCODE_MODULE_WIDTH_6</b>	732
	17 or 18	<b>BARCODE_MODULE_WIDTH_2</b>	298
		<b>BARCODE_MODULE_WIDTH_3</b>	447
		<b>BARCODE_MODULE_WIDTH_4</b>	596
		<b>BARCODE_MODULE_WIDTH_5</b>	745
		<b>BARCODE_MODULE_WIDTH_6</b>	894
<b>BARCODE_JAN13_ADDON</b>	14 or 15	<b>BARCODE_MODULE_WIDTH_2</b>	244
		<b>BARCODE_MODULE_WIDTH_3</b>	366
		<b>BARCODE_MODULE_WIDTH_4</b>	488
		<b>BARCODE_MODULE_WIDTH_5</b>	610
		<b>BARCODE_MODULE_WIDTH_6</b>	732
	17 or 18	<b>BARCODE_MODULE_WIDTH_2</b>	298
		<b>BARCODE_MODULE_WIDTH_3</b>	447
		<b>BARCODE_MODULE_WIDTH_4</b>	596
		<b>BARCODE_MODULE_WIDTH_5</b>	745
		<b>BARCODE_MODULE_WIDTH_6</b>	894

## B.1.2 printPDF417



### (1) Height of the barcode image

$$\text{Height of the barcode image}^{*1} = \text{moduleHeight} \times \text{row}^{*2}$$

\*1: Height of the barcode image = Length from the top of the barcode to the reference point

\*2:  $\text{row} \neq 0$

### (2) Width of the barcode image

When *pdf417Symbol* is **PDF417\_STANDARD**:

$$\text{Width of the barcode image} = (17 \times \text{column}^{*1} + 69) \times \text{module size value}$$

\*1:  $\text{column} \neq 0$

When *pdf417Symbol* is **PDF417\_COMPACT**:

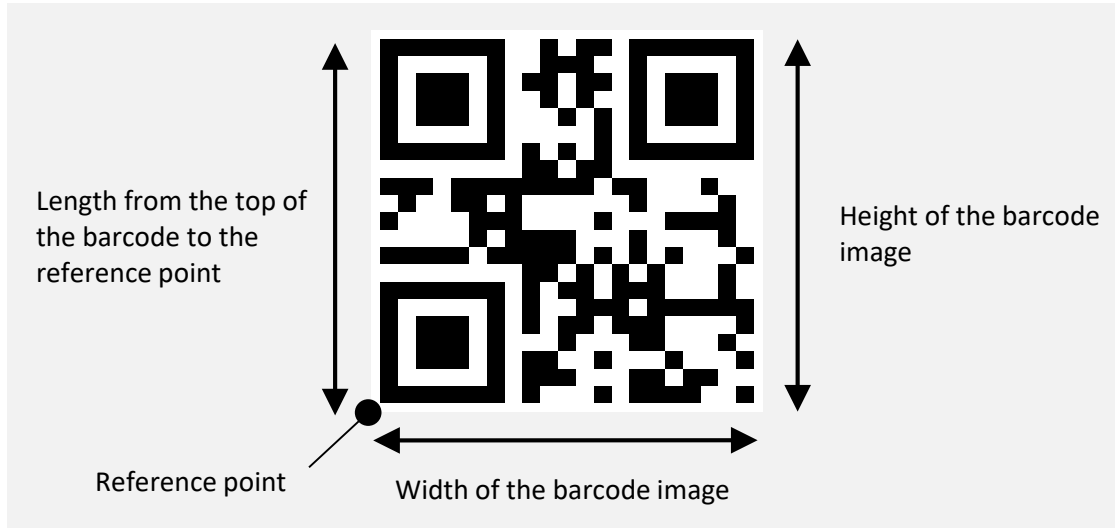
$$\text{Width of the barcode image} = (17 \times \text{column}^{*1} + 35) \times \text{module size value}$$

\*1:  $\text{column} \neq 0$

### Module Size Value

<i>moduleSize</i>	Module Size Value
<b>PDF417_MODULE_WIDTH_2</b>	2
<b>PDF417_MODULE_WIDTH_3</b>	3
<b>PDF417_MODULE_WIDTH_4</b>	4
<b>PDF417_MODULE_WIDTH_5</b>	5
<b>PDF417_MODULE_WIDTH_6</b>	6
<b>PDF417_MODULE_WIDTH_7</b>	7
<b>PDF417_MODULE_WIDTH_8</b>	8

### B.1.3 printQRCode



#### (1) Height and width of the barcode image

Height\*<sup>1</sup> and width of the barcode image =  $(4 \times \text{version}^{*2} + 17) \times \text{module size value}$

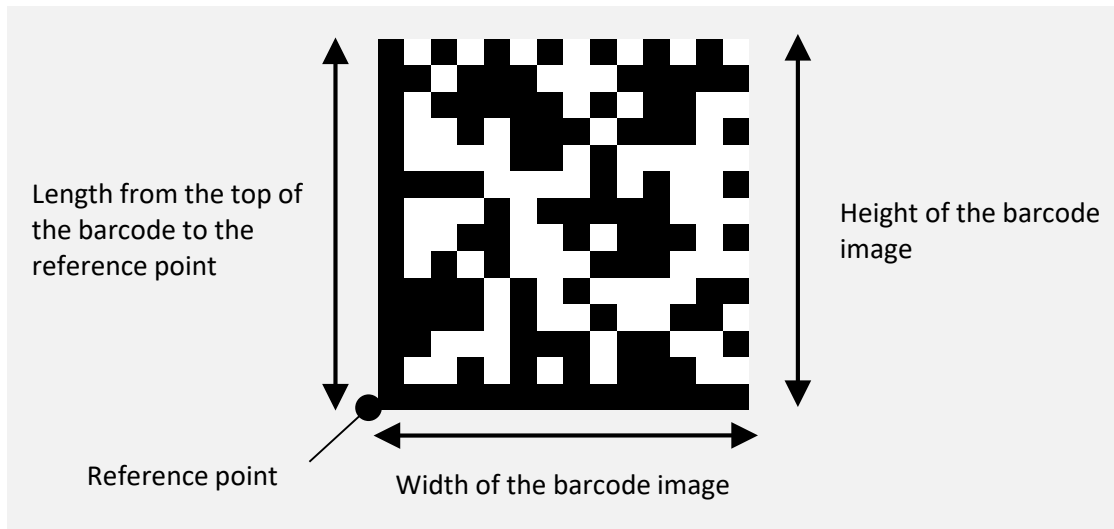
\*1: Height of the barcode image = Length from the top of the barcode to the reference point

\*2: The version is determined by the content of the barcode data and the error correction level.

#### Module Size Value

<i>moduleSize</i>	Module Size Value
QR_MODULE_SIZE_2	2
QR_MODULE_SIZE_3	3
QR_MODULE_SIZE_4	4
QR_MODULE_SIZE_5	5
QR_MODULE_SIZE_6	6
QR_MODULE_SIZE_7	7
QR_MODULE_SIZE_8	8
QR_MODULE_SIZE_9	9
QR_MODULE_SIZE_10	10
QR_MODULE_SIZE_11	11
QR_MODULE_SIZE_12	12
QR_MODULE_SIZE_13	13
QR_MODULE_SIZE_14	14
QR_MODULE_SIZE_15	15
QR_MODULE_SIZE_16	16

#### B.1.4 printDataMatrix



##### (1) Height and width of the barcode image

Height of the barcode image = number of vertical module × module size value

Width of the barcode image = number of horizontal module × module size value

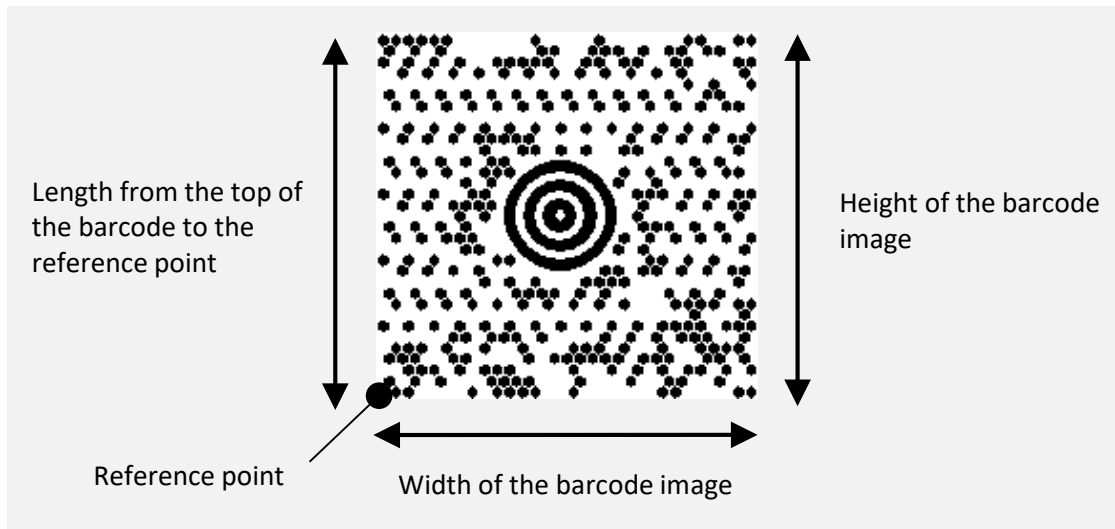
<i>dataMatrixModule</i>	<b>Number of Vertical Module</b>	<b>Number of Horizontal Module</b>
<b>DATA_MATRIX_10_10</b>	10	10
<b>DATA_MATRIX_12_12</b>	12	12
<b>DATA_MATRIX_14_14</b>	14	14
<b>DATA_MATRIX_16_16</b>	16	16
<b>DATA_MATRIX_18_18</b>	18	18
<b>DATA_MATRIX_20_20</b>	20	20
<b>DATA_MATRIX_22_22</b>	22	22
<b>DATA_MATRIX_24_24</b>	23	23
<b>DATA_MATRIX_26_26</b>	26	26
<b>DATA_MATRIX_32_32</b>	32	32
<b>DATA_MATRIX_36_36</b>	36	36
<b>DATA_MATRIX_40_40</b>	40	40
<b>DATA_MATRIX_44_44</b>	44	44
<b>DATA_MATRIX_48_48</b>	48	48
<b>DATA_MATRIX_52_52</b>	52	52
<b>DATA_MATRIX_64_64</b>	64	64
<b>DATA_MATRIX_72_72</b>	72	72
<b>DATA_MATRIX_80_80</b>	80	80
<b>DATA_MATRIX_88_88</b>	88	88
<b>DATA_MATRIX_96_96</b>	96	96
<b>DATA_MATRIX_104_104</b>	104	104
<b>DATA_MATRIX_120_120</b>	120	120

<i>dataMatrixModule</i>	Number of Vertical Module	Number of Horizontal Module
DATA_MATRIX_132_132	132	132
DATA_MATRIX_144_144	144	144
DATA_MATRIX_8_18	8	18
DATA_MATRIX_8_32	8	32
DATA_MATRIX_12_26	12	26
DATA_MATRIX_12_36	12	36
DATA_MATRIX_16_36	16	36
DATA_MATRIX_16_48	16	48

#### Module Size Value

<i>moduleSize</i>	Module Size Value
DATAMATRIX_MODULE_SIZE_2	2
DATAMATRIX_MODULE_SIZE_3	3
DATAMATRIX_MODULE_SIZE_4	4
DATAMATRIX_MODULE_SIZE_5	5
DATAMATRIX_MODULE_SIZE_6	6
DATAMATRIX_MODULE_SIZE_7	7
DATAMATRIX_MODULE_SIZE_8	8
DATAMATRIX_MODULE_SIZE_9	9
DATAMATRIX_MODULE_SIZE_10	10
DATAMATRIX_MODULE_SIZE_11	11
DATAMATRIX_MODULE_SIZE_12	12
DATAMATRIX_MODULE_SIZE_13	13
DATAMATRIX_MODULE_SIZE_14	14
DATAMATRIX_MODULE_SIZE_15	15
DATAMATRIX_MODULE_SIZE_16	16

### B.1.5 printMaxicode



(1) Height of the barcode image

Height of the barcode image<sup>\*1</sup> = 200

<sup>\*1</sup>: Height of the barcode image = Length from the top of the barcode to the reference point

(2) Width of the barcode image

Width of the barcode image = 210



### B.1.6 printGS1DataBarStacked



#### (1) Height and width of the barcode image

Height of the barcode image<sup>\*1</sup> = 13 × module size value

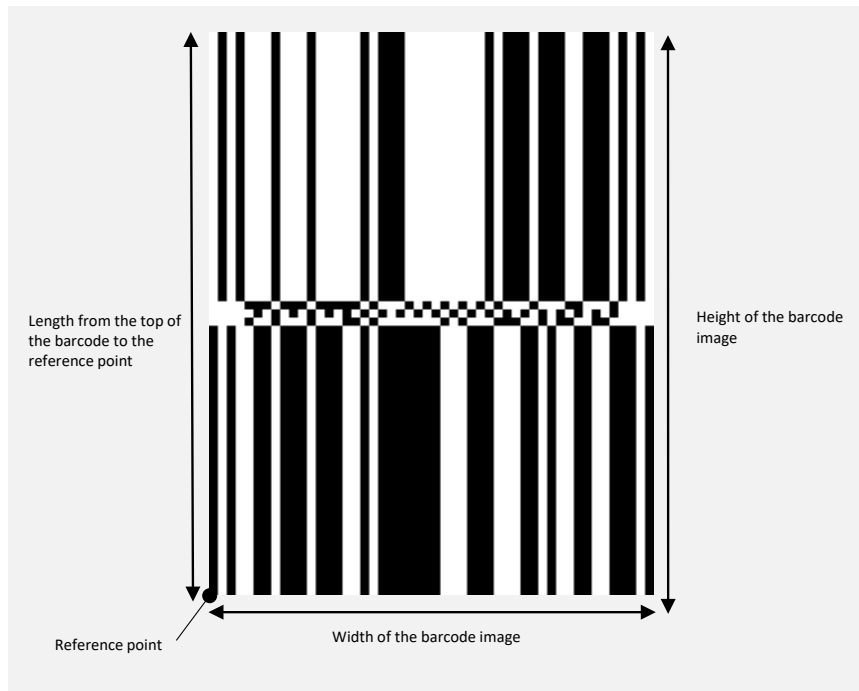
<sup>\*1</sup>: Height of the barcode image = Length from the top of the barcode to the reference point

Width of the barcode image = 50 × module size value

#### Module Size Value

<i>moduleSize</i>	Module Size Value
GS1DATABAR_MODULE_SIZE_2	2
GS1DATABAR_MODULE_SIZE_3	3
GS1DATABAR_MODULE_SIZE_4	4
GS1DATABAR_MODULE_SIZE_5	5
GS1DATABAR_MODULE_SIZE_6	6
GS1DATABAR_MODULE_SIZE_7	7
GS1DATABAR_MODULE_SIZE_8	8
GS1DATABAR_MODULE_SIZE_9	9
GS1DATABAR_MODULE_SIZE_10	10
GS1DATABAR_MODULE_SIZE_11	11
GS1DATABAR_MODULE_SIZE_12	12
GS1DATABAR_MODULE_SIZE_13	13
GS1DATABAR_MODULE_SIZE_14	14
GS1DATABAR_MODULE_SIZE_15	15
GS1DATABAR_MODULE_SIZE_16	16

### B.1.7 printGS1DataBarStackedOmnidirectional



#### (1) Height and width of the barcode image

Height of the barcode image<sup>\*1</sup> =  $(moduleHeight \times 2 + 3) \times \text{module size value}$

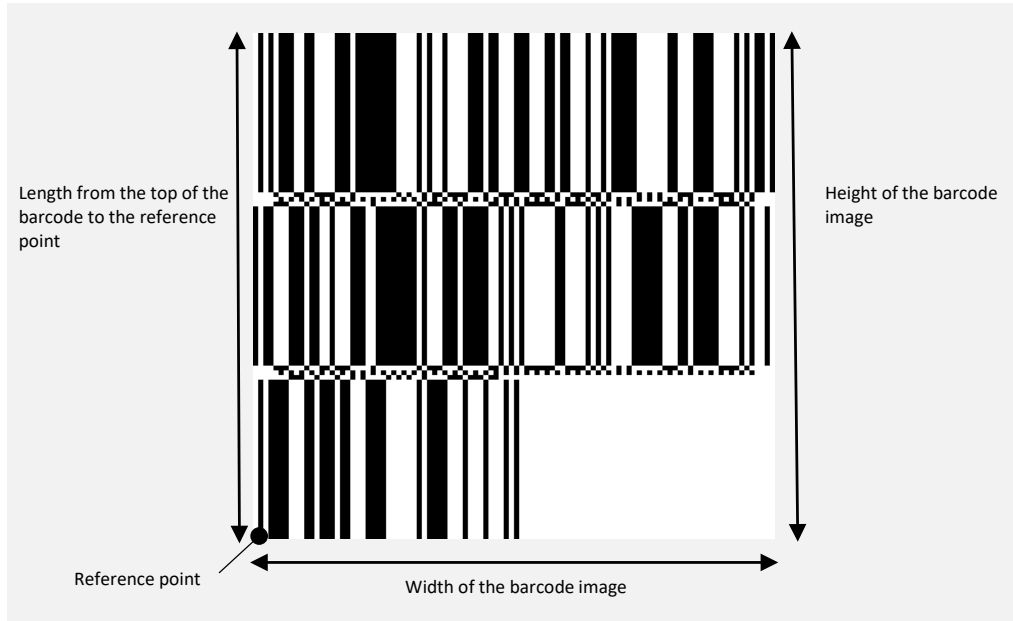
<sup>\*1</sup>: Height of the barcode image = Length from the top of the barcode to the reference point

Width of the barcode image =  $50 \times \text{module size value}$

#### Module Size Value

<i>moduleSize</i>	Module Size Value
GSIDATABAR_MODULE_SIZE_2	2
GSIDATABAR_MODULE_SIZE_3	3
GSIDATABAR_MODULE_SIZE_4	4
GSIDATABAR_MODULE_SIZE_5	5
GSIDATABAR_MODULE_SIZE_6	6
GSIDATABAR_MODULE_SIZE_7	7
GSIDATABAR_MODULE_SIZE_8	8
GSIDATABAR_MODULE_SIZE_9	9
GSIDATABAR_MODULE_SIZE_10	10
GSIDATABAR_MODULE_SIZE_11	11
GSIDATABAR_MODULE_SIZE_12	12
GSIDATABAR_MODULE_SIZE_13	13
GSIDATABAR_MODULE_SIZE_14	14
GSIDATABAR_MODULE_SIZE_15	15
GSIDATABAR_MODULE_SIZE_16	16

### B.1.8 printGS1DataBarExpandedStacked



#### (1) Height and width of the barcode image

Height of the barcode image<sup>\*1</sup> = ((34 + 3) × number of row<sup>\*2</sup> + 34) × module size value

\*1: Height of the barcode image = Length from the top of the barcode to the reference point

\*2: The number of row is determined by the barcode data.

Width of the barcode image = (4 + 49 × column / 2) × module size value

#### Module Size Value

<i>moduleSize</i>	Module Size Value
GS1DATABAR_MODULE_SIZE_2	2
GS1DATABAR_MODULE_SIZE_3	3
GS1DATABAR_MODULE_SIZE_4	4
GS1DATABAR_MODULE_SIZE_5	5
GS1DATABAR_MODULE_SIZE_6	6
GS1DATABAR_MODULE_SIZE_7	7
GS1DATABAR_MODULE_SIZE_8	8
GS1DATABAR_MODULE_SIZE_9	9
GS1DATABAR_MODULE_SIZE_10	10
GS1DATABAR_MODULE_SIZE_11	11
GS1DATABAR_MODULE_SIZE_12	12
GS1DATABAR_MODULE_SIZE_13	13
GS1DATABAR_MODULE_SIZE_14	14
GS1DATABAR_MODULE_SIZE_15	15
GS1DATABAR_MODULE_SIZE_16	16