SII

SII Print Class Library for iOS
Application Programmer's Guide

Rev.02

[Products]

SLP720RT Series

SLP721RT Series

Seiko Instruments Inc.

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INTRODUCTION

This manual describes "SII Print Class Library for iOS" (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.

Printer	Interface
SLP720RT Series SLP721RT Series[1]	TCP/IP

*1: The sales destination is Japan only.

Terms

The terms used in this manual are described below.

Term	Description
Technical Reference	Technical Reference shown as follows: SLP720RT SERIES THERMAL PRINTER TECHNICAL REFERENCE
User's Guide	User's Guide shown as follows: SLP720RT 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 iOS applications.
Moreover, the SII print class library provides the library sample program in Xcode project.

1.2 SII Print Class Library Overview

1.2.1 SII Print Class Library Configuration

The library and the sample program in the SII print class library are indicated with dashed lines in the figure below.
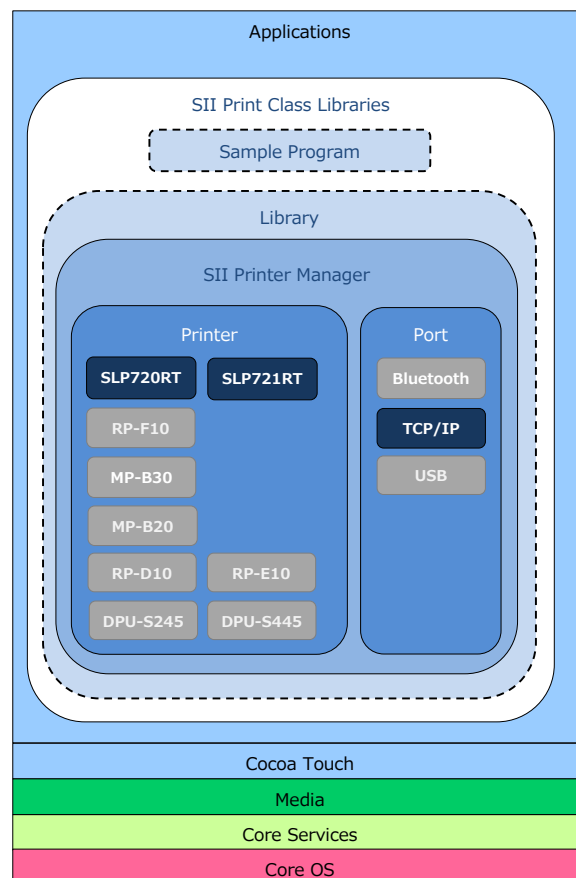
1.2.2 Functions Provided by Library

By using the library, iOS applications can easily send print data and printer commands to a printer through the communication port (TCP/IP) on an iOS 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[*1])

- Printing barcode and 2-dimensional barcode

- Sending a data file to a printer (print data and/or printer commands[*1])

- 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 TCP/IP

- Drawer operational control

- Buzzer sounding control

- Printing a label file

- Replacing object data in a label file

*1: Commands that read the response from the printer are not supported.
In order to read responses from the printer, use **getStatus** or **getPrinterResponse**.

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

Chapter 2
Product Specifications

This chapter describes the product specifications of the library.

2.1 Operating Environment

2.1.1 Applicable iOS Versions

Applicable iOS versions for the library are shown in the following list.

- iOS 13.0 to 13.7
- iOS 14.0 to 14.8
- iOS 15.0 to 15.7
- iPadOS 13.1 to 13.7
- iPadOS 14.0 to 14.8
- iPadOS 15.0 to 15.7

2.2 Printer Settings

Set the memory switches to [Value] in the following table when using the library.
The printer memory switches can be set in the iOS app "SII Printer Utility" on the App Store.

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[*1] 1: Disable[*2]
1-3	Mark Mode Selection (Mark Mode)	0: Enable[*3] 1: Disable[*4]
4-6	Paper Auto Detection Selection (Paper Auto Detection)	0: Enable[*3] 1: Disable[*3*4]
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[*5]

*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".
    ·**SII_PM_CUT_FULL** is specified to cuttingMethod of **cutPaper**, or MS1-2 (Taken Mode Selectoin) is set to
     "Enable" and **SII_PM_CUT_PARTIAL** is specified to cuttingMethod.

2.3 Precaution

This library is not thread safe. When this library is used on multiple threads, abnormal termination may occur.

When using TCP/IP connection, the communication port cannot be shared with printer drivers or other libraries in this library.
When using TCP/IP connection, wireless LAN access point to which the iOS device is connected and the printer need to be connected to the same network.

A concurrent connection from multiple apps to one printer is not supported when multiple apps are worked simultaneously by Multitasking on iPad with iPadOS.

Chapter 3
How to Use Library

This chapter describes the development environment of iOS application and how to use the library.

3.1 iOS Application Development Environment

In order to develop iOS applications, the following tools are required.

- Xcode 9.0 or later

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.
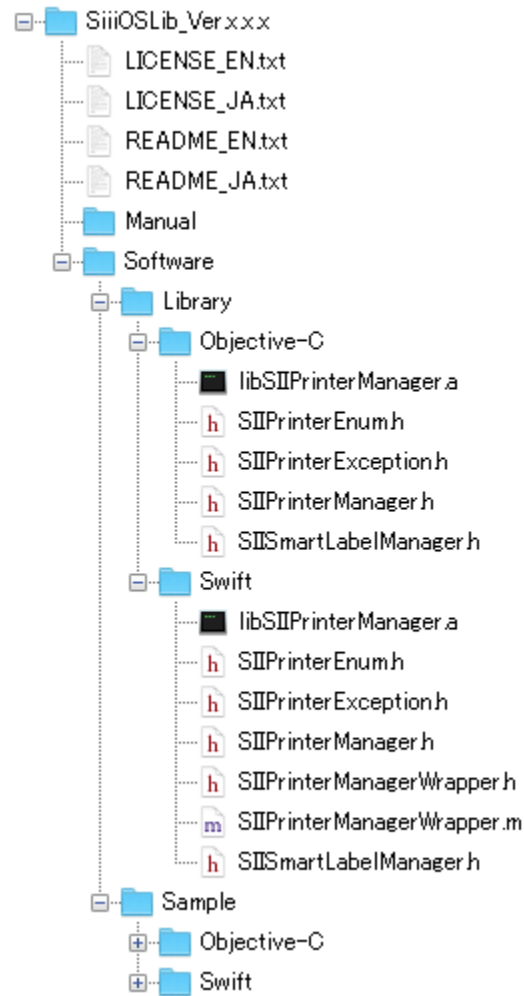
Figure 3-1

The file format of the library is Static Library. The file name of the library is libSIIPrinterManager.a.

3.3 Build Library into Xcode Project

Using the project of the sample program (SIILibSample) included in the SII print class library as an example, this section describes by development language how to build the library into the project.

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

Development Language	Description
Objective-C	See "3.3.1 Objective-C" for details to build the library as Objective-C.
Swift	See "3.3.2 Swift" for details to build the library as Swift.

3.3.1 Objective-C

(1) Open the Xcode project.

(2) Drag the following files to any hierarchy in the target project in [Project Navigator] of the navigator window.

- libSIIPrinterManager.a

- SIIPrinterEnum.h

- SIIPrinterException.h

- SIIPrinterManager.h

- SIISmartLabelManager.h
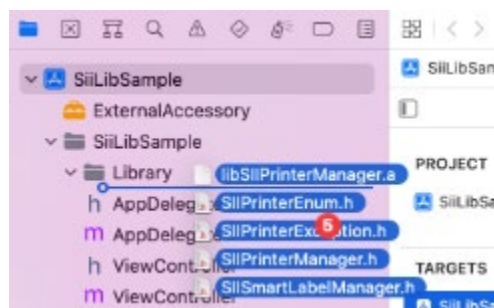
(3) Check the box [Copy items if needed], and click the [Finish] button.
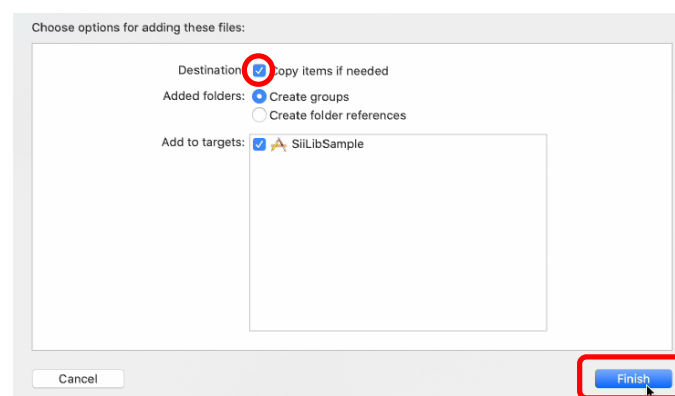
(4)   Select the target project in the [TARGETS], and open the [Build Settings] - [Build Options].
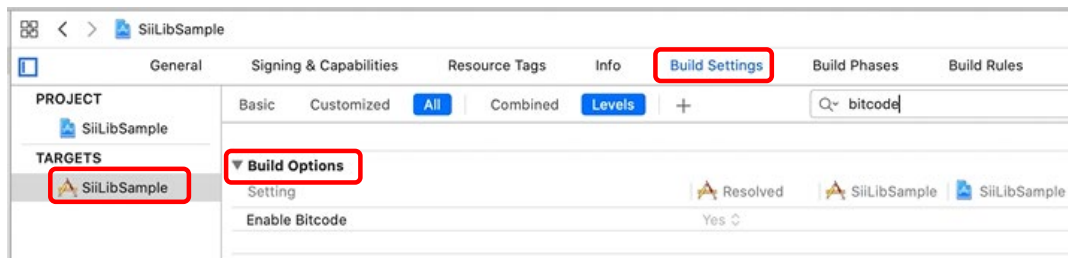
(5)   Select the Enable Bitcode in the opened [Build Options], and select the No in the menu.
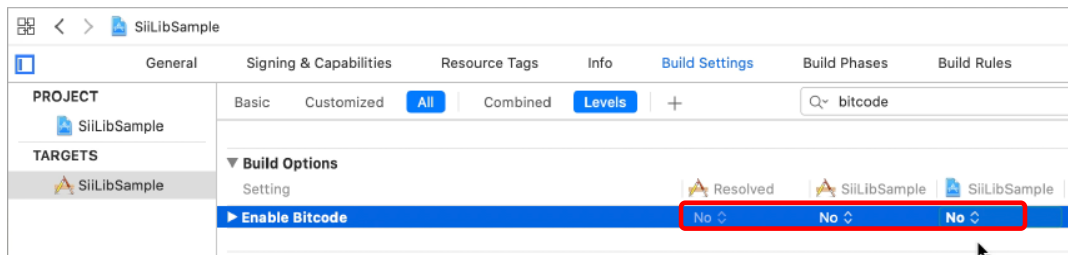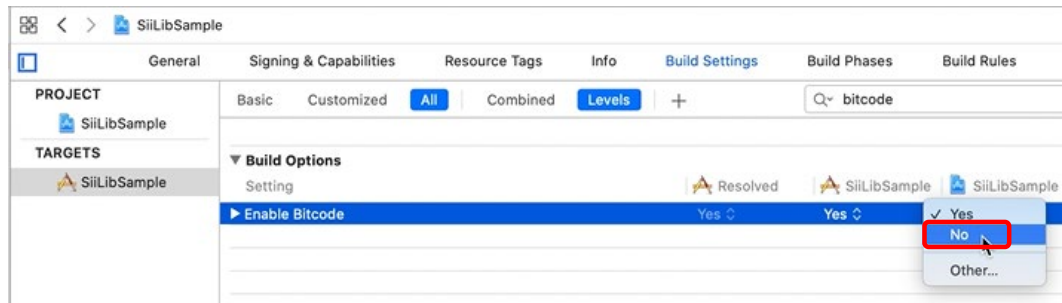
By completing these procedures, the library function becomes available.

3.3.2 Swift

(1) Open the Xcode project.

(2) Drag the following files to any hierarchy in the target project in [Project Navigator] of the navigator window.

- libSIIPrinterManager.a

- SIIPrinterEnum.h

- SIIPrinterException.h

- SIIPrinterManager.h

- SIIPrinterManagerWrapper.h

- SIIPrinterManagerWrapper.m

- SIISmartLabelManager.h
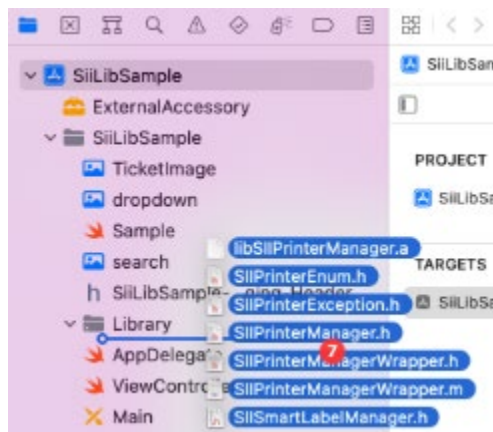
(3) Check the box [Copy items if needed], click the [Finish] button.
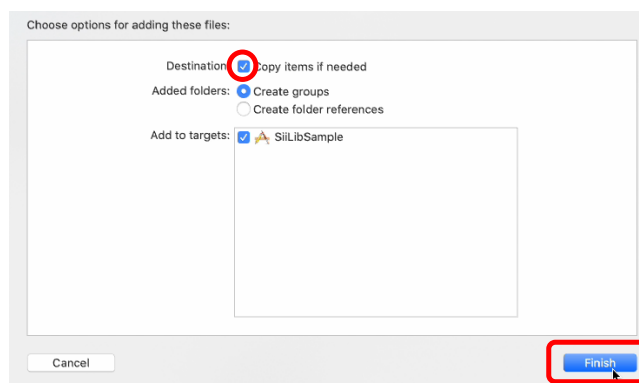
(4) The dialog is displayed. Select the [Create Bridging Header] button and create xxxxxxxx-Bridging-Header.h.
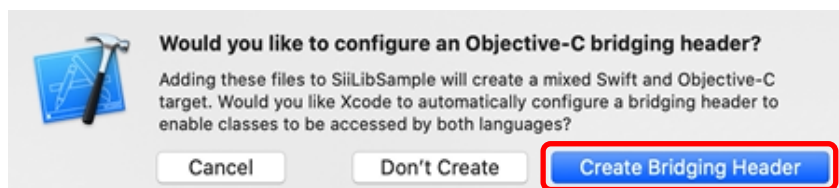
(5) Select the created xxxxxxxx-Bridging-Header.h.
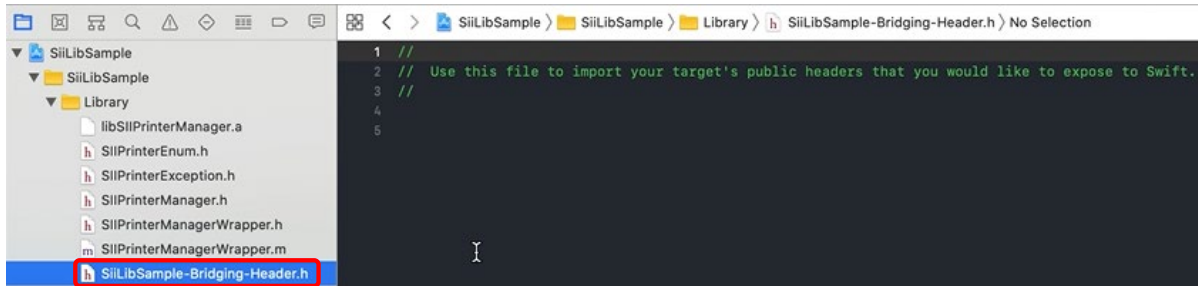
(6) Import the SIIPrinterManager.h and the SIIPrinterManagerWrapper.h into the xxxxxxxx-Bridging-Header.h.
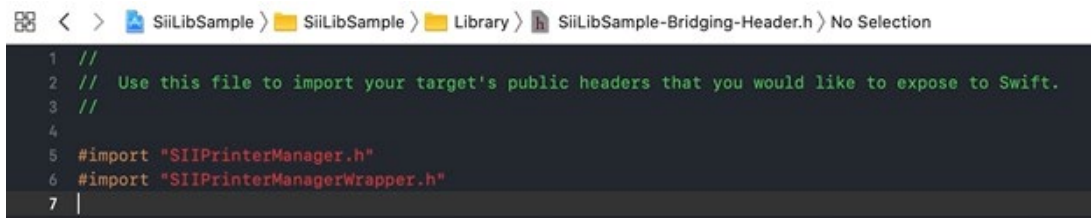
(7) Select the target project in the [TARGETS], and open the [Build Settings] - [Build Options].
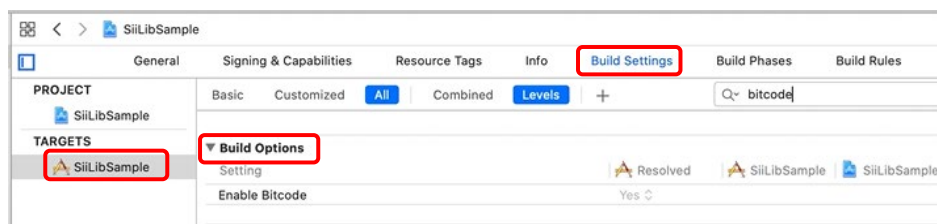
(8) Select the Enable Bitcode in the opened [Build Options], and select the No in the menu.
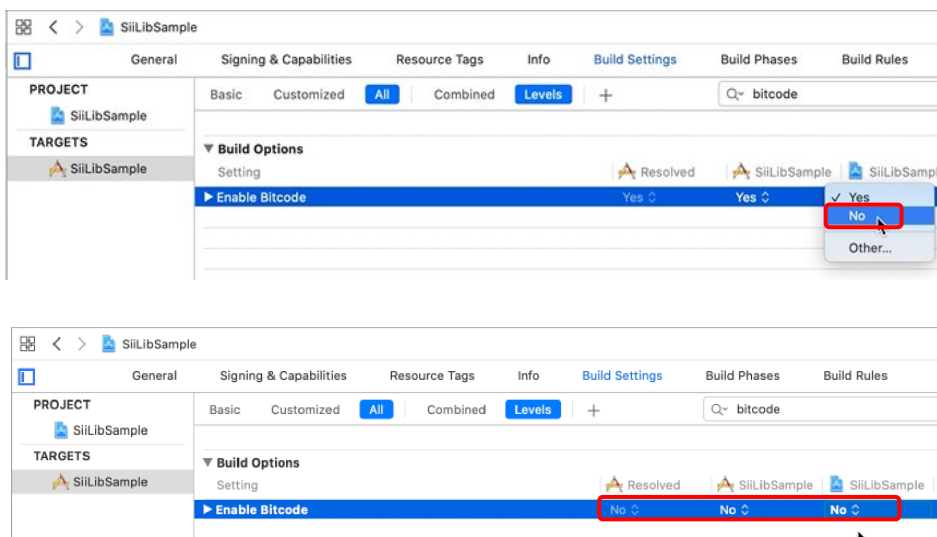
By completing these procedures, the library function becomes available.

Chapter 4
Functions of Library

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

4.1 Printing Label Function

The label files (*.sl) created using Smart Label Creator can be printed using the library.
It also provides the function to replace text data or image data using the label file and print.

Smart Label Creator is software that can create labels. It can be downloaded from the following web page.

- SLP720RT/SLP721RT series download page

  https://www.sii-ps.com/slp720rt/

4.1.1 Structure of Label File

The label file is the file where objects are mapped within the print area for the label.
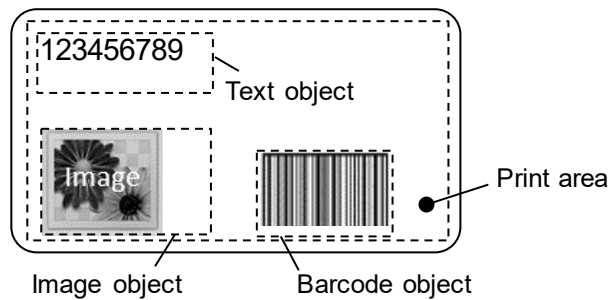
Example of label file (*.sl)

(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) Source		Supported in Library
		iOS/Android	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)	–	✓	✓

Object	Description	Label File (*.sl) Source		Supported in Library
		iOS/Android	Windows	
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	–	✓	–
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 Smart Label Creator 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 Text object

- The "Serialization" using Smart Label Creator is not supported.

- The "Zip code" using Smart Label Creator is not supported.

- The "Field Link" using Smart Label Creator is not supported.

- It is not supported that the function to clear decorations or add different decorations or font sizes to the portions of text. It is recommended to set font decorations and font sizes on an object-by-object basis using Smart Label Creator.

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

② Image object

- When the image source with Smart Label Creator is "Link to File", the image object cannot be printed using the library.

- When the image source with Smart Label Creator is "ClipArt", the image object cannot be printed using the library.

- The "Brightness" or "Contrast" of Smart Label Creator are not supported.

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

③ Barcode object

- Among the barcodes supported by Smart Label Creator, the following barcodes are supported by the library.

  - CODE39
  - CODE128
  - UPC-A
  - EAN13
  - CODABAR
  - UPC-E
  - EAN8
  - PDF417
  - Data Matrix
  - QR Code

- HRI characters are not supported.

- The "Serialization" using Smart Label Creator is not supported.

- The "Field Link" using Smart Label Creator is not supported.

- The barcode settings set using Smart Label Creator shown in the following are not reflected.

  - Ratio of bar width
  - Mode of PDF417
  - Security of Data Matrix
  - Mode of QR Code

- The barcode image created using Smart Label Creator 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 Smart Label Creator, the barcode will be reduced to fit within the object in the library and printed.

- When the mode of the Data Matrix is set to "1" (rectangle) using Smart Label Creator, the barcode is drawn in the middle of the object in the library.

- When the security of the PDF417 is set to "-1" using Smart Label Creator, it is fixed to "0" in the library and the object is drawn.

④ Drawing object

- When "Line Width" using Smart Label Creator is too thin, dashed, long dashed, or double lines may be squished.

- The drawn position of the drawing object using Smart Label Creator and one in the library may differ.

⑤ DateTime object

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

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 prints

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

Label file (*.sl)   Printing image data of label

Text object (ID = 1)   Text object (ID = 2)   ②

123456789   RRR   ABCDE   RRR

Image   Image2

Image object (ID = 1)   Barcode object (ID = 1)   ③   ④
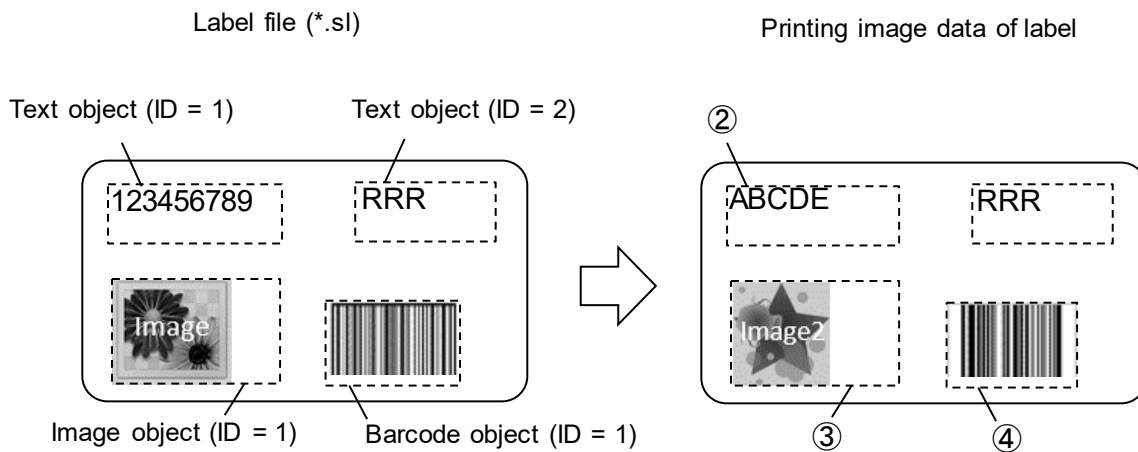
4.2 API Reference

This library includes the following classes and protocol.

Name	Description	Supported[1]
SIIPrinterManager	Provides the APIs used for communication with the printer and for printing. See "**4.2.1 SIIPrinterManager Class**" for details.	✓
SIIPrinterInfo	Stores the printer information found by **startDiscoveryPrinter**.	✓
SIIPrinterException	Exception class that is thrown at API call. See "**4.2.3 SIIPrinterException Class**" for details.	✓
SIIPrinterManagerDelegate	Provides the API to get notice from the printer. See "**4.2.4 SIIPrinterManagerDelegate Protocol**" for details.	✓
SIISmartLabelManager	Provides the API to specify label files or replace data. See "**4.2.5 SIISmartLabelManager Class**" for details.	✓

*1: ✓ : Supported, - : Not supported

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

4.2.1 `SIIPrinterManager` Class

(1) Method List

Methods provided by the `SIIPrinterManager` class are shown in the following table.

Name	Description	Supported [1]
`init`	Instance	✓
`connect`	Start communicating with printer	✓
`disconnect`	Stop communicating with printer	✓
`sendText`	Send text data	✓
`sendTextEx`	Send format specified text data	✓
`printBarcode`	Print barcode	✓
`printPDF417`	Print PDF417	✓
`printQRcode`	Print QR Code	✓
`printDataMatrix`	Print Data Matrix	✓
`printMaxiCode`	Print MaxiCode	✓
`printGS1DataBarStacked`	Print GS1 Databar Stacked	✓
`printGS1DataBarStackedOmnidirectional`	Print GS1 Databar Stacked Omni-directional	✓
`printGS1DataBarExpandedStacked`	Print GS1 Databar Expanded Stacked	✓
`printAztecCode`	Print Aztec Code	-
`cutPaper`	Cut paper	✓
`feedPosition`	Paper form feed	✓
`openDrawer`	Open cash drawer	✓ [2]
`buzzer`	Sound buzzer	-
`externalBuzzer`	Sound external buzzer	✓ [2]
`sendBinary`	Send binary data	✓
`sendDataFile`	Send specified file	✓
`getStatus`	Get printer status	✓
`abort`	Abort waiting state of printer	✓
`registerLogo`	Register logo	✓
`printLogo`	Print logo	✓
`unregisterLogo`	Delete registered logo	✓
`registerStyleSheet`	Register style sheet	-
`unregisterStyleSheet`	Delete registered style sheet	-
`resetPrinter`	Reset printer	✓
`getPrinterResponse`	Get various responses from printer	✓
`startDiscoveryPrinter`	Start printer search (Bluetooth)	-
`startDiscoveryPrinter`	Start printer search (TCP/IP)	✓
`cancelDiscoveryPrinter`	Cancel printer search	✓
`getFoundPrinter`	Get found printer information	✓
`getVersion`	Get SDK version	✓
`printSmartLabelImageData`	Print label	✓

Name	Description	Supported [1]
`controlTransaction`	Start/End batch processing	✓

*1: ✓ : Supported, -: Not supported
*2: Supported only by SLP721RT.

(2) Property List

Properties provided by `SIIPrinterManager` class are shown in the following table.

Name	Access	Description	Supported[1]
`sendTimeout`	R/W	Get/Set send timeout period	✓
`receiveTimeout`	R/W	Get/Set receive timeout period	✓
`internationalCharacter`	R/W	Get/Set international character set	✓
`codePage`	R/W	Get/Set codepage	✓
`printerModel`	R	Get printer model	✓
`portType`	R	Get connecting port type	✓
`isConnect`	R	Verify connection state with printer	✓
`socketKeepingTime`	R/W	Get/Set socket keeping time	✓
`delegate`	R/W	Register delegate	✓

*1: ✓ : Supported, - : Not supported

(3) 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
SII_PM_PRINTER_MODEL_SLP720RT	SLP720RT/SLP721RT	305

② Response type

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

Constant Name	Description	Value
SII_PM_PRINTER_RESPONSE_REQUEST	Execution response request	0
SII_PM_PRINTER_RESPONSE_USER_AREA	Send remaining capacity of user area	1
SII_PM_PRINTER_RESPONSE_ARRANGE_USER_AREA	Send remaining capacity of user area after defragment	2
SII_PM_PRINTER_RESPONSE_NV_GRAPHICS	Send NV graphics memory capacity	3
SII_PM_PRINTER_RESPONSE_KEY_CODE	Send key code list of defined NV graphics	4

③ International character set

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

Constant Name	Description	Value
SII_PM_COUNTRY_USA	USA	0
SII_PM_COUNTRY_FRANCE	France	1
SII_PM_COUNTRY_GERMANY	Germany	2
SII_PM_COUNTRY_ENGLAND	United Kingdom	3
SII_PM_COUNTRY_DENMARK_1	Denmark I	4
SII_PM_COUNTRY_SWEDEN	Sweden	5
SII_PM_COUNTRY_ITALY	Italy	6
SII_PM_COUNTRY_SPAIN	Spain I	7
SII_PM_COUNTRY_JAPAN	Japan	8
SII_PM_COUNTRY_NORWAY	Norway	9
SII_PM_COUNTRY_DENMARK_2	Denmark II	10
SII_PM_COUNTRY_SPAIN_2	Spain II	11
SII_PM_COUNTRY_LATIN_AMERICA	Latin America	12

Constant Name	Description	Value
SII_PM_COUNTRY_ARABIA	Arabia	17

④ Codepage

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

Constant Name	Description	Value
SII_PM_CODE_PAGE_437	USA, Standard Europe (Code Page437)	0
SII_PM_CODE_PAGE_KATAKANA	Katakana	1
SII_PM_CODE_PAGE_850	Multilingual (Code Page850)	2
SII_PM_CODE_PAGE_860	Portuguese (Code Page860)	3
SII_PM_CODE_PAGE_863	Canadian-French (Code page863)	4
SII_PM_CODE_PAGE_865	Nordic (Code Page865)	5
SII_PM_CODE_PAGE_857[1]	Turkish (Code Page857)	13
SII_PM_CODE_PAGE_737	Greek (Code Page737)	14
SII_PM_CODE_PAGE_1252	Latin (Code Page1252)	16
SII_PM_CODE_PAGE_866	Russian (Code Page866)	17
SII_PM_CODE_PAGE_852	Eastern Europe (CodePage 852)	18
SII_PM_CODE_PAGE_858	Euro (Code Page858)	19
SII_PM_CODE_PAGE_855	Cyrillic (Code Page855)	34
SII_PM_CODE_PAGE_864[1][2]	Arabic (Code Page864)	37
SII_PM_CODE_PAGE_1250	Central European (Code Page1250)	45
SII_PM_CODE_PAGE_1251	Cyrillic (Code Page1251)	46
SII_PM_CODE_PAGE_1253[3]	Greek (Code Page1253)	47
SII_PM_CODE_PAGE_1254	Turkish (Code Page1254)	48

*1: 20ACh of the Unicode cannot be printed.
*2: Font B cannot be printed.
*3: 00AAh of the Unicode cannot be printed.

⑤   Port type

Constants used for starting communication with the printer and getting the connection port type are shown in the following table.

Constant Name	Description	Value
SII_PM_PRINTER_PORT_TYPE_TCP	TCP/IP	2

⑥   Barcode and PDF417

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

Constant Name	Description	Value
SII_PM_BARCODE_HEIGHT_DEFAULT	Default value of barcode height	162
SII_PM_PDF417_MODULE_HEIGHT_DEFAULT	Default value of PDF417 height	10
SII_PM_PDF417_ROW_AUTO	Automatic selection of the number of rows	0
SII_PM_PDF417_COLUMN_AUTO	Automatic selection of the number of columns	0

(4) Enumerated Constant List

① Bold print (`CharacterBold`)

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

Constant Name	Description
SII_PM_BOLD_CANCEL	Cancel bold print
SII_PM_BOLD	Specify bold print

② Underline (`CharacterUnderline`)

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

Constant Name	Description
SII_PM_UNDERLINE_CANCEL	Cancel underline print
SII_PM_UNDERLINE_1	Specify 1-dot width underline print
SII_PM_UNDERLINE_2	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
SII_PM_REVERSE_CANCEL	Cancel reverse print
SII_PM_REVERSE	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
SII_PM_INVERSION_CANCEL	Cancel inversion print
SII_PM_INVERSION	Specify inversion print

⑤　Character font (`CharacterFont`)

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

Constant Name	Description
SII_PM_FONT_A	Font A (24 × 12)
SII_PM_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
SII_PM_VARTICAL_1_HORIZONTAL_1	Height × 1 and width × 1
SII_PM_VARTICAL_1_HORIZONTAL_2	Height × 1 and width × 2
SII_PM_VARTICAL_1_HORIZONTAL_3	Height × 1 and width × 3
SII_PM_VARTICAL_1_HORIZONTAL_4	Height × 1 and width × 4
SII_PM_VARTICAL_2_HORIZONTAL_1	Height × 2 and width × 1
SII_PM_VARTICAL_2_HORIZONTAL_2	Height × 2 and width × 2
SII_PM_VARTICAL_2_HORIZONTAL_3	Height × 2 and width × 3
SII_PM_VARTICAL_2_HORIZONTAL_4	Height × 2 and width × 4
SII_PM_VARTICAL_2_HORIZONTAL_6	Height × 2 and width × 6
SII_PM_VARTICAL_3_HORIZONTAL_1	Height × 3 and width × 1
SII_PM_VARTICAL_3_HORIZONTAL_2	Height × 3 and width × 2
SII_PM_VARTICAL_3_HORIZONTAL_3	Height × 3 and width × 3
SII_PM_VARTICAL_3_HORIZONTAL_4	Height × 3 and width × 4
SII_PM_VARTICAL_4_HORIZONTAL_1	Height × 4 and width × 1
SII_PM_VARTICAL_4_HORIZONTAL_2	Height × 4 and width × 2
SII_PM_VARTICAL_4_HORIZONTAL_3	Height × 4 and width × 3
SII_PM_VARTICAL_4_HORIZONTAL_4	Height × 4 and width × 4
SII_PM_VARTICAL_4_HORIZONTAL_6	Height × 4 and width × 6
SII_PM_VARTICAL_4_HORIZONTAL_8	Height × 4 and width × 8
SII_PM_VARTICAL_6_HORIZONTAL_2	Height × 6 and width × 2
SII_PM_VARTICAL_6_HORIZONTAL_4	Height × 6 and width × 4
SII_PM_VARTICAL_6_HORIZONTAL_6	Height × 6 and width × 6
SII_PM_VARTICAL_6_HORIZONTAL_8	Height × 6 and width × 8
SII_PM_VARTICAL_8_HORIZONTAL_4	Height × 8 and width × 4
SII_PM_VARTICAL_8_HORIZONTAL_6	Height × 8 and width × 6
SII_PM_VARTICAL_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
SII_PM_ALIGNMENT_LEFT	Aligned left
SII_PM_ALIGNMENT_CENTER	Centered
SII_PM_ALIGNMENT_RIGHT	Aligned right

⑧   Barcode symbol (`BarcodeSymbol`)

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

Constant Name	Description	Syntax[1]
SII_PM_BARCODE_UPC_A	UPC-A	(a)
SII_PM_BARCODE_UPC_E	UPC-E	(a)
SII_PM_BARCODE_EAN13	EAN13	(a)
SII_PM_BARCODE_JAN13	JAN13	(a)
SII_PM_BARCODE_EAN8	EAN8	(a)
SII_PM_BARCODE_JAN8	JAN8	(a)
SII_PM_BARCODE_CODE39	CODE39	(a), (b)
SII_PM_BARCODE_CODE93	CODE93	(c)
SII_PM_BARCODE_CODE128	CODE128	(c)
SII_PM_BARCODE_ITF	ITF	(a), (b)
SII_PM_BARCODE_CODABAR	CODABAR	(a), (b)
SII_PM_BARCODE_EAN13_ADDON	EAN13 add-on	(a)
SII_PM_BARCODE_JAN13_ADDON	JAN13 add-on	(a)
SII_PM_BARCODE_GS1_OMNI_DIRECTIONAL	GS1 Databar Omni-directional	(a)
SII_PM_BARCODE_GS1_TRUNCATED	GS1 Databar Truncated	(a)
SII_PM_BARCODE_GS1_LIMITED	GS1 Databar Limited	(a)
SII_PM_BARCODE_GS1_EXPANDED	GS1 Databar Expanded	(a)

[1]: See `printBarcode` for details of syntax.

⑨ 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
SII_PM_BARCODE_MODULE_WIDTH_2	Fine element 2 dots Module width 0.250 mm	printBarcode
SII_PM_BARCODE_MODULE_WIDTH_3	Fine element 3 dots Module width 0.375 mm	
SII_PM_BARCODE_MODULE_WIDTH_4	Fine element 4 dots Module width 0.500 mm	
SII_PM_BARCODE_MODULE_WIDTH_5	Fine element 5 dots Module width 0.625 mm	
SII_PM_BARCODE_MODULE_WIDTH_6	Fine element 6 dots Module width 0.750 mm	
SII_PM_PDF417_MODULE_WIDTH_2	Nominal fine element width 2 dots	printPDF417
SII_PM_PDF417_MODULE_WIDTH_3	Nominal fine element width 3 dots	
SII_PM_PDF417_MODULE_WIDTH_4	Nominal fine element width 4 dots	
SII_PM_PDF417_MODULE_WIDTH_5	Nominal fine element width 5 dots	
SII_PM_PDF417_MODULE_WIDTH_6	Nominal fine element width 6 dots	
SII_PM_PDF417_MODULE_WIDTH_7	Nominal fine element width 7 dots	
SII_PM_PDF417_MODULE_WIDTH_8	Nominal fine element width 8 dots	
SII_PM_QR_MODULE_SIZE_2	2 dots	printQRcode
SII_PM_QR_MODULE_SIZE_3	3 dots	
SII_PM_QR_MODULE_SIZE_4	4 dots	
SII_PM_QR_MODULE_SIZE_5	5 dots	
SII_PM_QR_MODULE_SIZE_6	6 dots	
SII_PM_QR_MODULE_SIZE_7	7 dots	
SII_PM_QR_MODULE_SIZE_8	8 dots	
SII_PM_QR_MODULE_SIZE_9	9 dots	
SII_PM_QR_MODULE_SIZE_10	10 dots	
SII_PM_QR_MODULE_SIZE_11	11 dots	
SII_PM_QR_MODULE_SIZE_12	12 dots	
SII_PM_QR_MODULE_SIZE_13	13 dots	
SII_PM_QR_MODULE_SIZE_14	14 dots	
SII_PM_QR_MODULE_SIZE_15	15 dots	
SII_PM_QR_MODULE_SIZE_16	16 dots	

Constant Name	Description	Method to Use
SII_PM_DATAMATRIX_MODULE_SIZE_2	2 dots	**printDataMatrix**
SII_PM_DATAMATRIX_MODULE_SIZE_3	3 dots	
SII_PM_DATAMATRIX_MODULE_SIZE_4	4 dots	
SII_PM_DATAMATRIX_MODULE_SIZE_5	5 dots	
SII_PM_DATAMATRIX_MODULE_SIZE_6	6 dots	
SII_PM_DATAMATRIX_MODULE_SIZE_7	7 dots	
SII_PM_DATAMATRIX_MODULE_SIZE_8	8 dots	
SII_PM_DATAMATRIX_MODULE_SIZE_9	9 dots	
SII_PM_DATAMATRIX_MODULE_SIZE_10	10 dots	
SII_PM_DATAMATRIX_MODULE_SIZE_11	11 dots	
SII_PM_DATAMATRIX_MODULE_SIZE_12	12 dots	
SII_PM_DATAMATRIX_MODULE_SIZE_13	13 dots	
SII_PM_DATAMATRIX_MODULE_SIZE_14	14 dots	
SII_PM_DATAMATRIX_MODULE_SIZE_15	15 dots	
SII_PM_DATAMATRIX_MODULE_SIZE_16	16 dots	
SII_PM_GS1DATABAR_MODULE_SIZE_2	2 dots	● **printGS1DataBarStacked** ● **printGS1DataBarStackedOmnidirectional** ● **printGS1DataBarExpandedStacked**
SII_PM_GS1DATABAR_MODULE_SIZE_3	3 dots	
SII_PM_GS1DATABAR_MODULE_SIZE_4	4 dots	
SII_PM_GS1DATABAR_MODULE_SIZE_5	5 dots	
SII_PM_GS1DATABAR_MODULE_SIZE_6	6 dots	
SII_PM_GS1DATABAR_MODULE_SIZE_7	7 dots	
SII_PM_GS1DATABAR_MODULE_SIZE_8	8 dots	
SII_PM_GS1DATABAR_MODULE_SIZE_9	9 dots	
SII_PM_GS1DATABAR_MODULE_SIZE_10	10 dots	
SII_PM_GS1DATABAR_MODULE_SIZE_11	11 dots	
SII_PM_GS1DATABAR_MODULE_SIZE_12	12 dots	
SII_PM_GS1DATABAR_MODULE_SIZE_13	13 dots	
SII_PM_GS1DATABAR_MODULE_SIZE_14	14 dots	
SII_PM_GS1DATABAR_MODULE_SIZE_15	15 dots	
SII_PM_GS1DATABAR_MODULE_SIZE_16	16 dots	

⑩　HRI character print position (`HriPosition`)

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

Constant Name	Description
SII_PM_HRI_NONE	Not printed
SII_PM_HRI_POSITION_ABOVE	Above barcode
SII_PM_HRI_POSITION_BELOW	Below barcode
SII_PM_HRI_POSITION_ABOVE_BELOW	Above and below barcode (both)

⑪　N:W ratio (`NwRatio`)

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

Constant Name	Description
SII_PM_NWRATIO_1TO2	1:2
SII_PM_NWRATIO_1TO2_5	1:2.5
SII_PM_NWRATIO_1TO3	1:3

⑫　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
SII_PM_PDF417_ERROR_CORRECTION_0	Error correction level 0	
SII_PM_PDF417_ERROR_CORRECTION_1	Error correction level 1	
SII_PM_PDF417_ERROR_CORRECTION_2	Error correction level 2	
SII_PM_PDF417_ERROR_CORRECTION_3	Error correction level 3	
SII_PM_PDF417_ERROR_CORRECTION_4	Error correction level 4	**printPDF417**
SII_PM_PDF417_ERROR_CORRECTION_5	Error correction level 5	
SII_PM_PDF417_ERROR_CORRECTION_6	Error correction level 6	
SII_PM_PDF417_ERROR_CORRECTION_7	Error correction level 7	
SII_PM_PDF417_ERROR_CORRECTION_8	Error correction level 8	
SII_PM_QR_ERROR_CORRECTION_L	Error correction level L	
SII_PM_QR_ERROR_CORRECTION_M	Error correction level M	**printQRcode**
SII_PM_QR_ERROR_CORRECTION_H	Error correction level H	
SII_PM_QR_ERROR_CORRECTION_Q	Error correction level Q	

⑬ PDF417 symbol (`Pdf417Symbol`)

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

Constant Name	Description
SII_PM_PDF417_STANDARD	PDF417
SII_PM_PDF417_COMPACT	Compact PDF417

⑭ QR Code Model (`QrModel`)

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

Constant Name	Description
SII_PM_QR_MODEL_2	QR Code Model 2

⑮ Data Matrix module (`DataMatrixModule`)

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

Constant Name	Description
SII_PM_DATA_MATRIX_AUTO	Number of modules: Automatic
SII_PM_DATA_MATRIX_10_10	Number of modules: 10 × 10
SII_PM_DATA_MATRIX_12_12	Number of modules: 12 × 12
SII_PM_DATA_MATRIX_14_14	Number of modules: 14 × 14
SII_PM_DATA_MATRIX_16_16	Number of modules: 16 × 16
SII_PM_DATA_MATRIX_18_18	Number of modules: 18 × 18
SII_PM_DATA_MATRIX_20_20	Number of modules: 20 × 20
SII_PM_DATA_MATRIX_22_22	Number of modules: 22 × 22
SII_PM_DATA_MATRIX_24_24	Number of modules: 24 × 24
SII_PM_DATA_MATRIX_26_26	Number of modules: 26 × 26
SII_PM_DATA_MATRIX_32_32	Number of modules: 32 × 32
SII_PM_DATA_MATRIX_36_36	Number of modules: 36 × 36
SII_PM_DATA_MATRIX_40_40	Number of modules: 40 × 40
SII_PM_DATA_MATRIX_44_44	Number of modules: 44 × 44
SII_PM_DATA_MATRIX_48_48	Number of modules: 48 × 48
SII_PM_DATA_MATRIX_52_52	Number of modules: 52 × 52
SII_PM_DATA_MATRIX_64_64	Number of modules: 64 × 64
SII_PM_DATA_MATRIX_72_72	Number of modules: 72 × 72
SII_PM_DATA_MATRIX_80_80	Number of modules: 80 × 80
SII_PM_DATA_MATRIX_88_88	Number of modules: 88 × 88

Constant Name	Description
SII_PM_DATA_MATRIX_96_96	Number of modules: 96 × 96
SII_PM_DATA_MATRIX_104_104	Number of modules: 104 × 104
SII_PM_DATA_MATRIX_120_120	Number of modules: 120 × 120
SII_PM_DATA_MATRIX_132_132	Number of modules: 132 × 132
SII_PM_DATA_MATRIX_144_144	Number of modules: 144 × 144
SII_PM_DATA_MATRIX_8_18	Number of modules: 8 × 18
SII_PM_DATA_MATRIX_8_32	Number of modules: 8 × 32
SII_PM_DATA_MATRIX_12_26	Number of modules: 12 × 26
SII_PM_DATA_MATRIX_12_36	Number of modules: 12 × 36
SII_PM_DATA_MATRIX_16_36	Number of modules: 16 × 36
SII_PM_DATA_MATRIX_16_48	Number of modules: 16 × 48

⑯　MaxiCode Mode (`MaxiCodeMode`)

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

Constant Name	Description
SII_PM_MAXI_CODE_2	Mode2
SII_PM_MAXI_CODE_3	Mode3
SII_PM_MAXI_CODE_4	Mode4
SII_PM_MAXI_CODE_5	Mode5

⑰　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
SII_PM_CUT_FULL	Enabled	Full cut
SII_PM_CUT_FULL_NO_FEED	Disabled	
SII_PM_CUT_PARTIAL	Enabled	Partial cut
SII_PM_CUT_PARTIAL_NO_FEED	Disabled	

⑱   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
SII_PM_FEED_CUTTER	After detecting the mark or gap, feeds the paper to the cut position. The paper feed length is the length of the memory switches MS 8 to 9 (Mark Position Correction) of the printer. The default of the paper feed length is 58 dots (7.25 mm).

⑲   Drawer number (`DrawerNum`)

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

Constant Name	Description
SII_PM_DRAWER_1	Drawer 1
SII_PM_DRAWER_2	Drawer 2

⑳   Pulse width (`PulseWidth`)

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

Constant Name	Description
SII_PM_ON_OFF_TIME_100	ON/OFF time 100 milliseconds
SII_PM_ON_OFF_TIME_200	ON/OFF time 200 milliseconds
SII_PM_ON_OFF_TIME_300	ON/OFF time 300 milliseconds
SII_PM_ON_OFF_TIME_400	ON/OFF time 400 milliseconds
SII_PM_ON_OFF_TIME_500	ON/OFF time 500 milliseconds
SII_PM_ON_OFF_TIME_600	ON/OFF time 600 milliseconds
SII_PM_ON_OFF_TIME_700	ON/OFF time 700 milliseconds
SII_PM_ON_OFF_TIME_800	ON/OFF time 800 milliseconds

㉑　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
SII_PM_BUZZER_PATTERN_1	Pattern 1
SII_PM_BUZZER_PATTERN_2	Pattern 2
SII_PM_BUZZER_PATTERN_3	Pattern 3
SII_PM_BUZZER_PATTERN_4	Pattern 4

㉒　Dithering (`Dithering`)

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

Constant Name	Description
SII_PM_DITHERING_DISABLE	Dithering is disabled.
SII_PM_DITHERING_ERRORDIFFUSION	Dithering is enabled.

㉓　Batch processing selection (`TransactionFunction`)

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

Constant Name	Description
SII_PM_TRANSACTION_CLEAR	Cancel batch processing
SII_PM_TRANSACTION_START	Start batch processing
SII_PM_TRANSACTION_PRINT	Finish batch printing and batch processing

(5) Method Details

`init` ⬛ Instance

Syntax	– (id) **init;**
Return value	When succeeded, the initialized instance of **SIIPrinterManager** class is returned. When failed, nil is returned.
Description	This method initializes the instance of **SIIPrinterManager** class.
Example of use	```SIIPrinterManager *printerManager =
[[SIIPrinterManager alloc] init];```

`connect` ⬛ Start communicating with printer

Starts communicating with the printer.

Syntax	```– (void) connect:(NSInteger)printerModel
address:(NSString)address
portType:(NSInteger)portType;```	
Parameter	`printerModel`	Printer model constant. See "4.2.1(3)① Printer model" for available constants.
	`address`	·For **SII_PM_PRINTER_PORT_TYPE_TCP**: Specify the IP address of the printer. Example: "192.168.0.190"
	`portType`	Port type See "4.2.1(3)⑤ Port type" for available constants.
Error	**SIIPrinterException** is thrown when an error occurs while this method is being called. See "**4.2.3 SIIPrinterException Class**" for details on the error.	
Description	Call this method before using other **SIIPrinterManager** class methods. In order to make this library work properly, this method may change the printer settings when connecting.	
	For TCP/IP connection: Communication with a printer connected to the same network as the iOS device starts through TCP/IP connection. Connection is made to the IP address specified by `address`. TCP port 9100 and 26100 are used for communication.	
	• 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 **socketKeepingTime**. Then the new socket is created immediately and used for the next connection. If the printer is receiving a connection request from another host on the same network at the time of discarding the socket, the printer establishes communication with that host, so the reconnection may fail.	
Note	A concurrent connection from multiple apps to one printer is not supported.	

Stops communicating with the printer.

Syntax	− (void) **disconnect;**	
Error	**SIIPrinterException** is thrown when an error occurs while this method is being called.	
	See "**4.2.3 SIIPrinterException Class**" for details on the error.	
Note	It is recommended to get execution response by **SII_PM_PRINTER_RESPONSE_REQUEST** of **getPrinterResponse** before executing this method. If not, the following problems may occur:	

- The communication is disconnected before the print data sending from iOS device to the printer is completed, and a part of the data may be lost.

If you do not execute **getPrinterResponse** in your program, please fully evaluate your program to confirm no problems arise.

Sends text data.

Syntax	− (void) **sendText:**(NSString *)text;	
Parameter	text	Text data to send to the printer Data size that can be specified at one time is 16 KB (16384 bytes).
Error	**SIIPrinterException** is thrown when an error occurs while this method is being called. See "**4.2.3 SIIPrinterException Class**" for details on the error.	
Description	This method encodes the specified text data to printable text data based on **internationalCharacter** and **codePage**, and 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.	

Sends format specified text data to the printer.
The method of syntax (a) can specify bold print, underline, reverse print, font, character scale and alignment to text data.
The method of syntax (b) can specify bold print, underline, font and character scale to text data.
The method of syntax (c) can specify bold print, underline, inversion print, reverse print, font, character scale and alignment to text data.

Syntax

```
(a) - (void) sendTextEx:(NSString *)text
                   bold:(CharacterBold)bold
              underline:(CharacterUnderline)underline
                reverse:(CharacterReverse)reverse
                   font:(CharacterFont)font
                  scale:(CharacterScale)scale
              alignment:(PrintAlignment)alignment;
```

```
(b) - (void) sendTextEx:(NSString *)text
                   bold:(CharacterBold)bold
              underline:(CharacterUnderline)underline
                   font:(CharacterFont)font
                  scale:(CharacterScale)scale;
```

```
(c) - (void) sendTextEx:(NSString *)text
                   bold:(CharacterBold)bold
              underline:(CharacterUnderline)underline
                reverse:(CharacterReverse)reverse
              inversion:(CharacterInversion)inversion
                   font:(CharacterFont)font
                  scale:(CharacterScale)scale
              alignment:(PrintAlignment)alignment;
```

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

            `bold`   Bold print
                             See "4.2.1(4)① Bold print (`CharacterBold`)" for available constants.

            `underline`   Underline
                             See "4.2.1(4)② Underline (`CharacterUnderline`)" for available constants.

            `reverse`   Reverse print
                             See "4.2.1(4)③ Reverse print (`CharacterReverse`)" for available constants.

            `inversion`   Inversion print
                             See "4.2.1(4)④ Inversion print (`CharacterInversion`)" for available constants.

            `font`   Character font
                             See "4.2.1(4)⑤ Character font (`CharacterFont`)" for available constants.

            `scale`   Character scale
                             See "4.2.1(4)⑥ Character scale (`CharacterScale`)" for available constants.

	alignment	Alignment
		See "4.2.1(4)⑦ Alignment (`PrintAlignment`)" for available constants.

Error	`SIIPrinterException` is thrown when an error occurs while this method is being called.
	See "**4.2.3 `SIIPrinterException` Class**" for details on the error.

Description	This method encodes the specified text data to printable text data based on `internationalCharacter` and `codePage`, and 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.

`printBarcode`	Print barcode

Prints the 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 byte array and specifies the alignment of the barcode.

Syntax	(a) - (void) **printBarcode:**(BarcodeSymbol)barcodeSymbol
	text:(NSString *)text
	moduleSize:(ModuleSize)moduleSize
	moduleHeight:(NSInteger)moduleHeight
	hriPosition:(HriPosition)hriPosition
	hriFont:(CharacterFont)hriFont
	alignment:(PrintAlignment)alignment;
	(b) - (void) **printBarcode:**(BarcodeSymbol)barcodeSymbol
	text:(NSString *)text
	moduleSize:(ModuleSize)moduleSize
	moduleHeight:(NSInteger)moduleHeight
	hriPosition:(HriPosition)hriPosition
	hriFont:(CharacterFont)hriFont
	alignment:(PrintAlignment)alignment
	nwRatio:(NwRatio)nwRatio;
	(c) - (void) **printBarcode:**(BarcodeSymbol)barcodeSymbol
	data:(NSData*)data
	moduleSize:(ModuleSize)moduleSize
	moduleHeight:(NSInteger)moduleHeight
	hriPosition:(HriPosition)hriPosition
	hriFont:(CharacterFont)hriFont
	alignment:(PrintAlignment)alignment;

Parameter	barcodeSymbol	Barcode symbol
		See "4.2.1(4)⑧ Barcode symbol (`BarcodeSymbol`)" for available constants and corresponding syntax.
	text(data)	Barcode data to send to the printer
	moduleSize	Barcode width
		See "4.2.1(4)⑨ Module size (`ModuleSize`)" for available constants.

moduleHeight   Barcode height (dot)

- When `barcodeSymbol` is below, the valid range is 1 to 255.
  SII_PM_BARCODE_UPC_A
  SII_PM_BARCODE_UPC_E
  SII_PM_BARCODE_EAN13
  SII_PM_BARCODE_JAN13
  SII_PM_BARCODE_EAN8
  SII_PM_BARCODE_JAN8
  SII_PM_BARCODE_CODE39
  SII_PM_BARCODE_CODE93
  SII_PM_BARCODE_CODE128
  SII_PM_BARCODE_ITF
  SII_PM_BARCODE_CODABAR
  SII_PM_BARCODE_EAN13_ADDON
  SII_PM_BARCODE_JAN13_ADDON

- When `barcodeSymbol` is below, the valid range varies depending on `barcodeSymbol` and `moduleSize`.

barcodeSymbol	
moduleSize	**Valid Range**
SII_PM_BARCODE_GS1_OMNI_DIRECTIONAL	
SII_PM_BARCODE_MODULE_WIDTH_2	66 to 255
SII_PM_BARCODE_MODULE_WIDTH_3	99 to 255
SII_PM_BARCODE_MODULE_WIDTH_4	132 to 255
SII_PM_BARCODE_MODULE_WIDTH_5	165 to 255
SII_PM_BARCODE_MODULE_WIDTH_6	198 to 255
SII_PM_BARCODE_GS1_TRUNCATED	
SII_PM_BARCODE_MODULE_WIDTH_2	26 to 255
SII_PM_BARCODE_MODULE_WIDTH_3	39 to 255
SII_PM_BARCODE_MODULE_WIDTH_4	52 to 255
SII_PM_BARCODE_MODULE_WIDTH_5	65 to 255
SII_PM_BARCODE_MODULE_WIDTH_6	78 to 255
SII_PM_BARCODE_GS1_LIMITED	
SII_PM_BARCODE_MODULE_WIDTH_2	20 to 255
SII_PM_BARCODE_MODULE_WIDTH_3	30 to 255
SII_PM_BARCODE_MODULE_WIDTH_4	40 to 255
SII_PM_BARCODE_MODULE_WIDTH_5	50 to 255
SII_PM_BARCODE_MODULE_WIDTH_6	60 to 255

barcodeSymbol		
moduleSize		**Valid Range**
SII_PM_BARCODE_GS1_EXPANDED		
	SII_PM_BARCODE_MODULE_WIDTH_2	68 to 255
	SII_PM_BARCODE_MODULE_WIDTH_3	102 to 255
	SII_PM_BARCODE_MODULE_WIDTH_4	136 to 255
	SII_PM_BARCODE_MODULE_WIDTH_5	170 to 255
	SII_PM_BARCODE_MODULE_WIDTH_6	204 to 255

hriPosition   HRI character print position
See "4.2.1(4)⑩ HRI character print position (`HriPosition`)" for available constants.

hriFont   HRI character font
See "4.2.1(4)⑤ Character font (`CharacterFont`)" for available constants.

alignment   Alignment
See "4.2.1(4)⑦ Alignment (`PrintAlignment`)" for available constants.

nwRatio   N:W ratio
See "4.2.1(4)⑪ N:W ratio (`NwRatio`)" for available constants.
Depending on the specified `nwRatio` and `moduleSize`, the width of the wide element is set as shown in the following table.

moduleSize	nwRatio		
	SII_PM_ NWRATIO_1TO2	**SII_PM_ NWRATIO_1TO2_5**	**SII_PM_ NWRATIO_1TO3**
SII_PM_BARCODE_MODULE_WIDTH_2	0.500 mm (4 dots)	0.625 mm (5 dots)	0.750 mm (6 dots)
SII_PM_BARCODE_ MODULE_WIDTH_3	0.750 mm (6 dots)	1.000 mm (8 dots)	1.125 mm (9 dots)
SII_PM_BARCODE_ MODULE_WIDTH_4	1.000 mm (8 dots)	1.250 mm (10 dots)	1.500 mm (12 dots)
SII_PM_BARCODE_MODULE_WIDTH_5	1.250 mm (10 dots)	1.625 mm (13 dots)	1.875 mm (15 dots)
SII_PM_BARCODE_MODULE_WIDTH_6	1.500 mm (12 dots)	1.875 mm (15 dots)	2.250 mm (18 dots)

Error   **SIIPrinterException** is thrown when an error occurs while this method is being called.
See "**4.2.3 SIIPrinterException Class**" for details on the error.

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.

Prints PDF417.
The method of syntax (a) specifies the PDF417 symbol.
The method of syntax (b) is fixed to standard PDF417.

Syntax

```
(a) - (void) printPDF417:(NSString *)text
              errorCorrection:(ErrorCorrection)errorCorrection
              row:(NSInteger)row
              column:(NSInteger)column
              moduleSize:(ModuleSize)moduleSize
              moduleHeight:(NSInteger)moduleHeight
              alignment:(PrintAlignment)alignment
              pdf417Symbol:(Pdf417Symbol)pdf417Symbol;
```

```
(b) - (void) printPDF417:(NSString *)text
              errorCorrection:(ErrorCorrection)errorCorrection
              row:(NSInteger)row
              column:(NSInteger)column
              moduleSize:(ModuleSize)moduleSize
              moduleHeight(NSInteger)moduleHeight
              alignment:(PrintAlignment)alignment;
```

Parameter

`text`	Barcode data to send to the printer
`errorCorrection`	Error correction level See "4.2.1(4)⑫ Error correction level (`ErrorCorrection`)" for available constants.
`row`	Number of rows (row) The valid range is 0, 3 to 90. When 0 is specified, the number of rows is automatically set.
`column`	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.
`moduleSize`	Nominal fine element width See "4.2.1(4)⑨ Module size (`ModuleSize`)" for available constants.
`moduleHeight`	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.
`alignment`	Alignment See "4.2.1(4)⑦ Alignment (`PrintAlignment`)" for available constants.
`pdf417Symbol`	PDF417 symbol See "4.2.1(4)⑬ PDF417 symbol (`Pdf417Symbol`)" for available constants.

Error   **SIIPrinterException** is thrown when an error occurs while this method is being called.
See "**4.2.3 SIIPrinterException Class**" for details on the error.

Note   The quiet zone is not secured. Set the quiet zone in accordance with the standard of the barcode symbol.

printQRcode   Print QR Code

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

Syntax
```
(a) - (void) printQRcode:(NSString *)text
              errorCorrection(ErrorCorrection)errorCorrection
              moduleSize:(ModuleSize)moduleSize
              alignment:(PrintAlignment)alignment
              model:(QrModel)model;

(b)- (void) printQRcode:(NSString *)text
              errorCorrection:(ErrorCorrection)errorCorrection
              moduleSize:(ModuleSize)moduleSize
              alignment:(PrintAlignment)alignment;
```

Parameter   text   Barcode data to send to the printer
                               The version is automatically set depending on the number of data
                               bytes set with text in either syntax (a) and (b).

             errorCorrection   Error correction level
                               See "4.2.1(4)⑫ Error correction level (ErrorCorrection)" for
                               available constants.

             moduleSize   Module size
                               See "4.2.1(4)⑨ Module size (ModuleSize)" for available
                               constants.

             alignment   Alignment
                               See "4.2.1(4)⑦ Alignment (PrintAlignment)" for available
                               constants.

             model   QR Code Model
                               See "4.2.1(4)⑭ QR Code Model (QrModel)" for available
                               constants.

Error   **SIIPrinterException** is thrown when an error occurs while this method is being
             called.
             See "**4.2.3 SIIPrinterException Class**" for details on the error.

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
```
- (void) printDataMatrix:(NSString *)text
         dataMatrixModule:(DataMatrixModule)dataMatrixModule
         moduleSize:(ModuleSize)moduleSize
         alignment:(PrintAlignment)alignment;
```

Parameter   text   Barcode data to send to the printer

dataMatrixModule	Number of Data Matrix modules See "4.2.1(4)⑮ Data Matrix module (`DataMatrixModule`)" for available constants.	
moduleSize	Module size See "4.2.1(4)⑨ Module size (`ModuleSize`)" for available constants.	
alignment	Alignment See "4.2.1(4)⑦ Alignment (`PrintAlignment`)" for available constants.	

Error   **`SIIPrinterException`** is thrown when an error occurs while this method is being called.
See "**4.2.3 `SIIPrinterException` Class**" for details on the error.

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.

`printMaxiCode`   Print MaxiCode

Prints MaxiCode.

Syntax   `- (void) ` **`printMaxiCode:`**`(NSString *)text`
`                    maxiCodeMode:(MaxiCodeMode)maxiCodeMode`
`                    alignment:(PrintAlignment)alignment;`

Parameter   `text`   Barcode data to send to the printer

- When `maxiCodeMode` is **SII_PM_MAXI_CODE_2**:
  Add service class (3 digits), country code (3 digits), and postal code (9 digits) to the beginning of the data.

- When `maxiCodeMode` is **SII_PM_MAXI_CODE_3**:
  Add service class (3 digits), country code (3 digits), and postal code (6 digits) to the beginning of the data.

maxiCodeMode	MaxiCode Mode See "4.2.1(4)⑯ MaxiCode Mode (`MaxiCodeMode`)" for available constants.	
alignment	Alignment See "4.2.1(4)⑦ Alignment (`PrintAlignment`)" for available constants.	

Error   **`SIIPrinterException`** is thrown when an error occurs while this method is being called.
See "**4.2.3 `SIIPrinterException` Class**" for details on the error.

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.

`printGS1DataBarStacked`	Print GS1 Databar Stacked

Prints GS1 Databar Stacked.

Syntax	`- (void) printGS1DataBarStacked:(NSString *)text`
	`moduleSize:(ModuleSize)moduleSize`
	`alignment:(PrintAlignment)alignment;`

Parameter	`text`	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.
	`moduleSize`	Module size See "4.2.1(4)⑨ Module size (`ModuleSize`)" for available constants.
	`alignment`	Alignment See "4.2.1(4)⑦ Alignment (`PrintAlignment`)" for available constants.
Error	**`SIIPrinterException`** is thrown when an error occurs while this method is being called. See "**4.2.3 `SIIPrinterException` Class**" for details on the error.
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	`- (void) printGS1DataBarStackedOmnidirectional:(NSString *)text`
	`moduleHeight:(NSInteger)moduleHeight`
	`moduleSize:(ModuleSize)moduleSize`
	`alignment:(PrintAlignment)alignment;`

Parameter	`text`	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.
	`moduleHeight`	Barcode module height (number of modules) The valid range is 33 to 255.
	`moduleSize`	Module size See "4.2.1(4)⑨ Module size (`ModuleSize`)" for available constants.
	`alignment`	Alignment See "4.2.1(4)⑦ Alignment (`PrintAlignment`)" for available constants.
Error	**`SIIPrinterException`** is thrown when an error occurs while this method is being called. See "**4.2.3 `SIIPrinterException` Class**" for details on the error.
Reference	See "Appendix B Barcode Size List" for details of the barcode size.

Prints GS1 Databar Expanded Stacked.

Syntax		`- (void) ` **`printGS1DataBarExpandedStacked:`**`(NSString *)text`
		`                     column:(NSInteger)column`
		`                     moduleSize:(ModuleSize)moduleSize`
		`                     alignment:(PrintAlignment)alignment;`

Parameter	`text`	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' for FNC1. Be sure to input the check digit because it is
		not automatically calculated by the printer.
	`column`	Number of columns
		Specify the number of columns in 1 line.
		An even number from 2 to 20 is valid.
	`moduleSize`	Module size
		See "4.2.1(4)⑨ Module size (`ModuleSize`)" for available
		constants.
	`alignment`	Alignment
		See "4.2.1(4)⑦ Alignment (`PrintAlignment`)" for available
		constants.

Error	**`SIIPrinterException`** is thrown when an error occurs while this method is being
	called.
	See "**4.2.3 `SIIPrinterException` Class**" for details on the error.

Reference	See "Appendix B Barcode Size List" for details of the barcode size.

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

Syntax	`- (void) ` **`printAztecCode:`**`(NSString *)text`
	`                     layer:(NSInteger)layer`
	`                     errorCorrection:(NSInteger)errorCorrection`
	`                     moduleSize:(ModuleSize)moduleSize`
	`                     aztecSymbol:(AztecSymbol)aztecSymbol`
	`                     alignment:(PrintAlignment)alignment;`

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

Syntax		`- (void) ` **`cutPaper:`**`(CuttingMethod)cuttingMethod;`

Parameter	`cuttingMethod`	Cutting method
		See "4.2.1(4)⑪ Cutting method (`CuttingMethod`)" for available
		constants.

Error	**`SIIPrinterException`** is thrown when an error occurs while this method is being
	called.
	See "**4.2.3 `SIIPrinterException` Class**" for details on the error.

feedPosition — Paper form feed

Performs the paper form feed of marked paper or label to the cut position.

Syntax	– (void) **feedPosition:**(FeedPosition)feedPosition;	
Parameter	feedPosition	Form feed position See "4.2.1(4)⑱ Form feed position (FeedPosition)" for available constants.
Error	**SIIPrinterException** is thrown when an error occurs while this method is being called. See "**4.2.3 SIIPrinterException Class**" for details on the error.	
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.	

openDrawer — Open cash drawer

Opens the specified cash drawer.
Supported only by SLP721RT.

Syntax	– (void) **openDrawer:**(DrawerNum)drawerNum onOffTime:(PulseWidth)onOffTime;	
Parameter	drawerNum	Drawer number See "4.2.1(4)⑲ Drawer number (DrawerNum)" for available constants.
	onOffTime	Pulse width See "4.2.1(4)⑳ Pulse width (PulseWidth)" for available constants.
Error	**SIIPrinterException** is thrown when an error occurs while this method is being called. See "**4.2.3 SIIPrinterException Class**" for details on the error.	

buzzer — Sound buzzer

This method is not supported. When executing this method, **SIIPrinterException** is thrown.

Syntax	– (void) **buzzer:**(NSInteger)onTime offTime:(NSInteger)offTime;

Sounds the external buzzer.
Supported only by SLP721RT.

Syntax	`- (void) externalBuzzer:(BuzzerPattern)buzzerPattern` `                    buzzerCount:(NSInteger)buzzerCount;`	
Parameter	`buzzerPattern`	Buzzer pattern See "4.2.1(3)㉑ 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 `buzzerCount` ・ Opening the cover ・ Executing the printer command "Stop External Buzzer"
	`buzzerCount`	Buzzer sound count (times) The external buzzer sounds for the number of times set by `buzzerCount`. The valid range is 1 to 255.
Error	**`SIIPrinterException`** is thrown when an error occurs while this method is being called. See "**4.2.3 `SIIPrinterException` Class**" for details on the error.	

Sends binary data to the printer.

Syntax	`- (void) sendBinary:(NSData*)data;`	
Parameter	`data`	Binary data to send to the printer Data size that can be specified at one time is 256 KB (262144 bytes).
Error	**`SIIPrinterException`** is thrown when an error occurs while this method is being called. See "**4.2.3 `SIIPrinterException` Class**" for details on the error.	
Description	This method sends the specified binary data to the printer without conversion. By sending printer command as binary data with this method, printer functions not supported in the library become available. However, this method does not support commands to get the response from the printer.	

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

Syntax
```
(a) - (void) sendDataFile:(NSString *)fileName
                 alignment:(PrintAlignment)alignment
                 dithering:(Dithering)dithering;

(b) - (void) sendDataFile:(NSString *)fileName
                 alignment:(PrintAlignment)alignment;
```

Parameter `fileName`
Name of data file to send to the printer
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 sent to the printer. Printing is performed in batch after mapping the image file on the 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 **internationalCharacter** and **codePage**, 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 at the end of the text data.

- .bin, .dat
  Data is sent to the printer as binary data without conversion.

`alignment`
Alignment
It is valid when the extension of the file specified by `fileName` is .bmp, .jpg, .jpeg, .png, or .txt.
See "4.2.1(4)⑦ Alignment (`PrintAlignment`)" for available constants.

`dithering`
Dithering
It is valid when the extension of the file specified by `fileName` is .bmp, .jpg, .jpeg, or .png.
See "4.2.1(4)㉒ Dithering (`Dithering`)

" for available constants.

Error
SIIPrinterException is thrown when an error occurs while this method is being called.
See "**4.2.3 SIIPrinterException Class**" for details on the error.

Gets the latest printer status.

Syntax   – (void) **getStatus**:(NSInteger[])buf;

Parameter   `buf`   Status retrieved from the printer

Error   **SIIPrinterException** is thrown when an error occurs while this method is being
                called.
                See "**4.2.3 SIIPrinterException Class**" for details on the error.

Description   The status retrieved from the printer is stored in an NSInteger array.

                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[*1]	High
16	FLASH memory rewriting	Not rewriting	Rewriting
17 to 18	Reserved	Fixed	-
19 to 31	Reserved	-	Fixed

*1: Low is fixed in SLP720RT.

Aborts the waiting state of the printer.

Syntax	`- (void) abort;`	
Error	**`SIIPrinterException`** is thrown when an error occurs while this method is being called. See "**4.2.3 `SIIPrinterException` Class**" for details on the error.	
Description	When sending of image file by **`sendDataFile`** is interrupted, 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 executing this method, a part of unprinted image file may be printed.	

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

Syntax	(a) `- (void) registerLogo:(NSString *)fileName`
	`                logoId:(NSString *)logoId`
	`                dithering:(Dithering)dithering;`
	
	(b) `- (void) registerLogo:(NSString *)fileName`
	`                logoId:(NSString *)logoId;`	

Parameter	`fileName`	File name of image file to be registered as a logo Supported image file file extensions are .bmp, .jpg, .jpeg, and .png. Colored image is converted to monochrome image by binarization and registered.
	`logoId`	ID of the logo to be registered (key code) Specify the ID of the logo to be registered as a two-character string. Valid characters are ASCII character codes from 20h (space) to 7Eh (tilde) such as alphanumeric ('0' to '9', 'A' to 'Z', 'a' to 'z').
	`dithering`	Dithering See "4.2.1(4)㉒ Dithering (`Dithering`)" for available constants.
Error	**`SIIPrinterException`** is thrown when an error occurs while this method is being called. See "**4.2.3 `SIIPrinterException` Class**" for details on the error.	

printLogo — Print logo

Prints the registered logo.

Syntax	– (void) **printLogo:**(NSString *)logoId alignment(PrintAlignment)alignment;	
Parameter	logoId	ID of the logo to be printed (key code) Specify the ID of the registered logo as a character string.
	alignment	Alignment See "4.2.1(4)⑦ Alignment (PrintAlignment)" for available constants.
Error	**SIIPrinterException** is thrown when an error occurs while this method is being called. See "**4.2.3 SIIPrinterException Class**" for details on the error.	

unregisterLogo — Delete registered logo

Deletes the registered logo.

Syntax	– (void) **unregisterLogo:**(NSString *)logoId;	
Parameter	logoId	ID of the logo to be deleted (key code) Specify the ID of the registered logo as a character string.
Error	**SIIPrinterException** is thrown when an error occurs while this method is being called. See "**4.2.3 SIIPrinterException Class**" for details on the error.	

registerStyleSheet — Register style sheet

This method is not supported. When executing this method, **SIIPrinterException** is thrown.

Syntax	– (void) **registerSytleSheet:**(NSString *)fileName cssId:(NSInteger)cssId;

unregisterStyleSheet — Delete registered style sheet

This method is not supported. When executing this method, **SIIPrinterException** is thrown.

Syntax	– (void) **unregisterStyleSheet:**(NSInteger)cssId;

Performs a hardware reset of the printer.

Syntax	– (void) **resetPrinter**;	
Error	**SIIPrinterException** is thrown when an error occurs while this method is being called. See "**4.2.3 SIIPrinterException Class**" for details on the error.	
Description	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.	

Gets response data from the printer.

Syntax	– (void) **getPrinterResponse**:(NSInteger)responseId
	                    param:(NSObject *)param
	                    response:(void *)response;	

Parameter	responseId	Response type constant See "4.2.1(3)② Response type" for available constants.
	param	Command parameter The value to be specified varies with the response type constant. See the following table for description of the value to be specified.
	response	Buffer for storing the retrieved response data The buffer type varies with the response type constant. See the following table for the buffer type.

Response Type Constant	
Parameter	**Description**
SII_PM_PRINTER_RESPONSE_REQUEST (Execution response request)	
param	Specify 0 to 15 (00h to 0Fh) in NSData type.
response	Specify an NSInteger array of length 1. When the response is retrieved successfully, the response code of the execution response request is stored with 128 to 143 (80h to 8Fh).
SII_PM_PRINTER_RESPONSE_USER_AREA (Send remaining capacity of user area)	
param	Specify nil.
response	Specify an NSInteger array of length 1. When the response is retrieved successfully, the remaining capacity of the user area is stored as a numerical value in bytes.

Response Type Constant	
Parameter	**Description**
SII_PM_PRINTER_RESPONSE_ARRANGE_USER_AREA (Send remaining capacity of user area after defragment)	
`param`	Specify nil.
`response`	Specify an NSInteger array of length 1. When the response is retrieved successfully, the remaining capacity of the user area after defragment is stored as a numerical value in bytes.
SII_PM_PRINTER_RESPONSE_NV_GRAPHICS (Send NV graphics memory capacity)	
`param`	Specify nil.
`response`	Specify an NSInteger array of length 1. When the response is retrieved successfully, the NV graphics memory capacity is stored as a numerical value in bytes.
SII_PM_PRINTER_RESPONSE_KEY_CODE (Send key code list of defined NV graphics)	
`param`	Specify nil.
`response`	Specify an NSMutableArray array. When the response is retrieved successfully, the key code of NV graphics is stored as a string array.

Error **SIIPrinterException** is thrown when an error occurs while this method is being called.
See "**4.2.3 SIIPrinterException Class**" for details on the error.

`startDiscoveryPrinter`   **Start printer search (Bluetooth)**

This method is not supported. When this method is executed, searches for SII printers other than SLP720RT/SLP721RT.

Syntax   – (void)**startDiscoveryPrinter:**(NSPredicate *)predicate
                completion:(EABluetoothAccessoryPickerCompletion)completion;

`startDiscoveryPrinter`   **Start printer search (TCP/IP)**

Searches for SII printer connecting to the same network.

Syntax   – (void)**startDiscoveryPrinter:**(NSInteger)retryCount
                    timeout:(NSInteger)timeout
                    completion:(SIIDiscoveryPrinterCompletion)completion;

Parameter   `retryCount`   Retry count (times)
                        Sends the local broadcast packet the number of times set by
                        `retryCount`.
                        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.

timeout		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 `timeout` 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.
completion		Printer search completion event
		Notifies the block set by `completion` as an event.

Error	**SIIPrinterException** is thrown when an error occurs while this method is being called.
Description	This method searches for SII printers. The printer information of the found printer can be retrieved by **getFoundPrinter**.
	The definition of `SIIDiscoveryPrinterCompletion` is as follows:
	`typedef void(^SIIDiscoveryPrinterCompletion)(NSArray *printerList);`

---

cancelDiscoveryPrinter   Cancel printer search

Cancels **startDiscoveryPrinter** (TCP/IP) under execution.

Syntax	`- (void)`**cancelDiscoveryPrinter;**
Description	This method is available only when `portType` of **connect** is **SII_PM_PRINTER_PORT_TYPE_TCP**.
	The cancellation of the search is notified as an event to the block set to `completion` of **startDiscoveryPrinter**.

---

getFoundPrinter   Get found printer information

Returns the printer information found by **startDiscoveryPrinter** (TCP/IP) in NSArray type.

Syntax	`- (NSArray *)`**getFoundPrinter;**
Return value	NSArray type printer information
Description	This method is available only when `portType` of **connect** is **SII_PM_PRINTER_PORT_TYPE_TCP**.
	See "**4.2.2 SIIPrinterInfo Class**" for details of the printer information.

---

getVersion   Get SDK version

Gets the SDK version as a character string.

Syntax	`- (NSString *)`**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 be executed regardless of whether **isConnect** is YES or NO.

Prints labels.

Syntax　　　　　- (void *) **printSmartLabelImageData:**
　　　　　　　　　　　　　　　　　　　　　(SIISmartLabelManager *)labelManager;

Parameter　　　labelManager
　　　　　　　　　　　　　The class to provide the function in which converts the label file
　　　　　　　　　　　　　into the printable data from the printer.

Error　　　　　**SIIPrinterException** is thrown when an error occurs while this method is being
　　　　　　　called.
　　　　　　　See "**4.2.3 SIIPrinterException Class**" for details on the error.

Description　　See "　　" for the print example using this method.

Starts or ends batch processing.

Syntax　　　　　- (void)**controlTransaction:**(TransactionFunction)control;

Parameter　　　control　　　　　　Batch processing selection
　　　　　　　　　　　　　　　　　See "4.2.1(4)㉓ Batch processing selection" for available
　　　　　　　　　　　　　　　　　constants.

Error　　　　　**SIIPrinterException** is thrown when an error occurs while this method is being
　　　　　　　called.
　　　　　　　See "**4.2.3 SIIPrinterException Class**" for details on the error.

Description　　The procedure of batch processing is as follows:
　　　　　　　(1) Start batch processing.
　　　　　　　　　Specify **SII_PM_TRANSACTION_START.**

　　　　　　　(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 **SII_PM_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 **SII_PM_TRANSACTION_CLEAR**
　　　　　　　　　·Specify **SII_PM_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**
- **printLogo**[1]
- **printSmartLabelImageData**

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

(6) Common Property Details

`sendTimeout`	Get/Set send timeout period

Gets or sets the timeout period in sending data.

Syntax	`@property NSInteger sendTimeout;`
Valid range	100 to 300000 (millisecond: ms) When the value is specified less than 100, the period is set to 100 ms. When the value is specified more than 300000, the period is set to 300000 ms.
Default	10000
Description	This property can get or set the timeout period regardless of whether `isConnect` is YES or NO. The set timeout period becomes effective at the next data sending.

`receiveTimeout`	Get/Set receive timeout period

Gets or sets the timeout period in receiving data.

Syntax	`@property NSInteger receiveTimeout;`
Valid range	100 to 300000 (millisecond: ms) When the value is specified less than 100, the period is set to 100 ms. When the value is specified more than 300000, the period is set to 300000 ms.
Default	10000
Description	This property can get or set the timeout period regardless of whether `isConnect` is YES or NO. The set timeout period becomes effective at the next data receiving.

`internationalCharacter`	Get/Set international character set

Gets or sets the value of international character set.

Syntax	`@property NSInteger internationalCharacter;`

Description	See "4.2.1(3)③ International character set"4.2.1(3)① for configurable constants. When an invalid value is specified, it is ignored.
	When this property is not set, the international character set is as follows depending on the language setting of iOS device.
	
	When the language setting of iOS device is Japanese: **SII_PM_COUNTRY_JAPAN**
	When the language setting of iOS device is other than Japanese:
	                                        SII_PM_COUNTRY_USA
	
	When 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 of the 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

codePage   Get/Set codepage

Gets or sets the value of codepage.

Syntax	`@property NSInteger codePage;`
Description	See "4.2.1(3)④ Codepage" for configurable constants. When an invalid value is specified, it is ignored. When this property is not set, the codepage is as follows depending on the language setting of iOS device.

When the language setting of iOS device is Japanese:

SII_PM_CODE_PAGE_KATAKANA

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

SII_PM_CODE_PAGE_1252

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

printerModel   Get printer model

Gets the value of the connecting printer model.

Syntax	`@property(readonly) NSInteger printerModel;`
Default	-1
Return value	See "4.2.1(3)① Printer model" for available constants. When **isConnect** is NO, -1 is returned.

portType   Get connecting port type

Gets the value of the port type used for connection with the printer.

Syntax	`@property(readonly) NSInteger portType;`
Default	-1
Return value	See "4.2.1(3)⑤ Port type" for available constants. When **isConnect** is NO, -1 is returned.

isConnect   Verify connection state with printer

Verifies connection state with the printer.

Syntax	`@property(readonly) BOOL isConnect;`
Return value	YES Connected to the printer NO Not connected to the printer
Description	This property retains the **connect** state as a BOOL value. When **connect** succeeds, this property is YES. After **connect**, when **disconnect** succeeds, this property becomes NO.

`socketKeepingTime`	Get/Set socket keeping time

Gets or sets the socket keeping time.

Syntax	`@property NSInteger ` **`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 property can get or set the socket keeping time regardless of whether **`isConnect`** is YES or NO. 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 "SII Printer Utility" with the iOS app on the App Store. The set socket keeping time becomes effective at the next **`connect`** execution.

`delegate`	Register delegate

Registers a delegate object that receives notifications from the printer.

Syntax	`@property(weak, nonatmic) id<SIIPrinterManagerDelegate> ` **`delegate;`**
Description	Specify an object conforming to **`SIIPrinterManagerDelegate`** protocol. When this property is executed with the delegate object registered, the already registered delegate object becomes disabled, and a new delegate object is registered. When nil is specified for this property, the notification of the printer status is stopped.

4.2.2 `SIIPrinterInfo` Class

`SIIPrinterInfo` class stores the printer information found by printer searching method. It gets the printer model name, MAC address, and IP address from the found printer information.

(1) Method List

Methods provided by `SIIPrinterInfo` class are shown in the following table.

Name	Description
`SIIPrinterInfo`	Constructor of the printer information class

(2) Property List

Properties provided by `SIIPrinterInfo` class are shown in the following table.

Name	Access	Description
`name`	R	Get printer model name
`mac`	R	Get MAC address
`ip`	R	Get IP address

(3) Method Details

`SIIPrinterInfo`	Constructor

    Syntax   `SIIPrinterInfo`

    Description   This method stores the printer information found by `startDiscoveryPrinter`.

(4)   Property Details

name	Get printer model name

Syntax   `@property NSString **name;`

Description   This property gets the printer model name from the printer information found by
                 startDiscoveryPrinter.

mac	Get MAC address

Syntax   `@property NSString **mac;`

Description   This property gets the MAC address from the printer information found by
                 startDiscoveryPrinter.

ip	Get IP address

Syntax   `@property NSString **ip;`

Description   This property gets the IP address from the printer information found by
                 startDiscoveryPrinter.

4.2.3 `SIIPrinterException` Class

(1) Method List

Methods provided by `SIIPrinterException` class are shown in the following table.

Name	Description
`SIIPrinterException`	Constructor

(2) Property List

Properties provided by `SIIPrinterException` class are shown in the following table.

Name	Access	Description
`errorCode`	R	Get error code
`errorMessage`	R	Get error message

(3) Constant List

① Error code

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

Constant Name	Description	Value
SII_PM_ERROR_ACCESS_DENIED	Failed to get the handle.[1]	-1
	An unavailable port was specified.	
	An unsupported method was specified.	
SII_PM_ERROR_SHARING_VIOLATION	An already opened port was specified.	-11
SII_PM_ERROR_PORT_NOT_OPENED	The port is not open.	-12
SII_PM_ERROR_OFFLINE	Disconnected state or the printer is offline.	-22
SII_PM_ERROR_DEVICE_INITIALIZE_FAILED	Failed to change the printer settings. 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
SII_PM_ERROR_DATA_SIZE_ZERO	0-byte data was specified.	-101
SII_PM_ERROR_OVER_MAX_DATA_SIZE	Maximum data size is exceeded.	-102
SII_PM_ERROR_ENCODE_FAILED	An error occurred in encoding text data.[1]	-111
SII_PM_ERROR_TIMEOUT	Send timeout occurred.	-201
	Receive timeout occurred.	
SII_PM_ERROR_FILE_NOT_FOUND	The specified file is not found.	-301
SII_PM_ERROR_FILE_USED	The specified file is in use by another process.	-302
SII_PM_ERROR_FILE_INVALID	The specified file is invalid.	-303
SII_PM_ERROR_LOW_MEMORY	Memory shortage occurred when loading image file.	-311
SII_PM_ERROR_OVER_MAX_IMAGE	Either or both of width and height of image file exceeds the number of printable maximum dots.	-312
SII_PM_ERROR_LOGO_NOT_DEFINED	The logo is not registered.	-313
SII_PM_ERROR_LOW_USER_AREA	Remaining user area is insufficient.	-401
SII_PM_ERROR_LOW_EXTERNAL_RAM	Remaining RAM capacity is insufficient.	-402
SII_PM_ERROR_INVALID_NO	The specified value for the logo ID is invalid.	-501
SII_PM_ERROR_LABEL_FILE_NOT_SELECTED	The label file is not selected.	-521
SII_PM_ERROR_GET_LABEL_IMAGE	Failed to create the label image.	-522
SII_PM_ERROR_INVALID_PARAM	The specified parameter is invalid.	-9999

[1]: Abnormal processing might have occurred.

(4) Method Details

SIIPrinterException	Constructor

This is the exception class that is thrown when API of **SIIPrinterManager** class is called.

    Syntax   **SIIPrinterException**

(5) Property Details

errorCode	Get error code

Gets the error code of the thrown exception.

    Syntax   @property NSInteger **errorCode;**

    Return value   See "4.2.3(3) Constant List".

errorMessage	Get error message

Gets the error message of the thrown exception.

    Syntax   @property NSString *__errorMessage;__

    Description   A character string that supplements the contents of **errorCode** can be retrieved.

4.2.4 `SIIPrinterManagerDelegate` Protocol

(1) Method List

Methods provided by **`SIIPrinterManagerDelegate`** protocol are shown in the following table.

Name	Description
`didStatusChange`	Notify printer status

> **(NOTE) SLP720RT/SLP721RT does not support the APIs of the barcode scanner.**

(2) Method Details

`didStatusChange`	Notify printer status

Notifies changes in the printer status.

Syntax	– (void) **didStatusChange:**(SIIPrinterManager *)printerManager status:(NSInteger)status;
Parameter	printerManager	Calling SIIPrinterManager object
	status	Printer status
Description	This method is called the latest status at the following timing. ·When **connect** is executed. ·When the printer status is changed. This method is called when **isConnect** is YES. The notification of the printer status is stopped by **disconnect**. The notification of the printer status is stopped by setting nil to **delegate**. When communication with the printer is disconnected, this method notifies 0x80000000. After disconnection from the printer, the library attempts to resume communication with the printer until **disconnect** is executed. When communication with the printer becomes possible, this method notifies the latest printer status. See **getStatus** for description of the printer status. Do not execute the APIs of SIIPrinterManager within this method.

4.2.5 `SIISmartLabelManager` Class

`SIISmartLabelManager` class provides the function to covert the label file (*.sl) created using Smart Label Creator into the printable data from the printer.

(1) Method List

Methods provided by the `SIISmartLabelManager` class are shown in the following table.

Name	Description
`selectSmartLabelFile`	Specify label file
`replaceSmartLabelTextData`	Replace text data of label
`replaceSmartLabelImageData`	Replace image data of label
`replaceSmartLabelBarcodeData`	Replace barcode data of label

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

Label file (*.sl)　　　　　　　　　　　　Printing image data of label
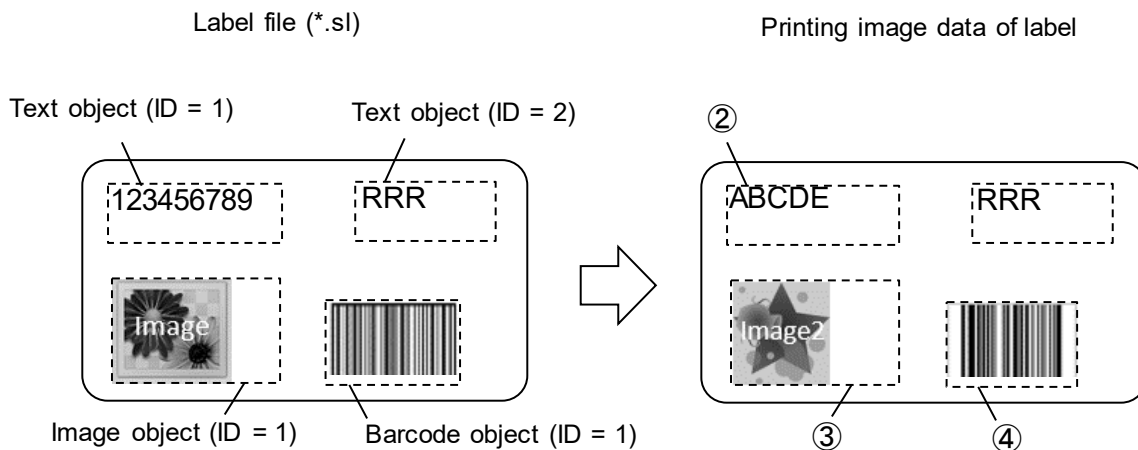
① Specify a label file to print or replace data.

```
[labelManager selectSmartLabelFile:filePath];
```

② Replace text data.

```
[labelManager replaceSmartLabelTextData:1 text:@"ABCDE"];
```

③ Replace image data.

```
[labelManager replaceSmartLabelImageData:1 image:SeasonImage];
```

④ Replace barcode data.

```
[labelManager replaceSmartLabelBarcodeData:1 text:@"123456789"];
```

⑤ Print labels.

```
[printerManager printSmartLabelImageData:labelManager];
```

(2) Method Details

selectSmartLabelFile — Specify label file

Specifies a label file (*.sl).

Syntax	– (void) **selectSmartLabelFile:**(NSString *)fileName;	
Parameter	fileName	Name of label file (*.sl) to use Specify the label file created in Smart Label Creator.
Error	**SIIPrinterException** is thrown when an error occurs while this method is being called. See "**4.2.3 SIIPrinterException Class**" for details on the error.	
Description	The specified label file (*.sl) 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.	

replaceSmartLabelTextData — Replace text data of label

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

Syntax	– (void)**replaceSmartLabelTextData:**(NSInteger)mapID text:(NSString *)text;	
Parameter	mapID	ID of text object Specify the ID of the text object mapped on the label file (*.sl) of Smart Label Creator. The ID of the text object can be confirmed on the object pane of Smart Label Creator.

Text 2 -> mapID = 2

UI display of Smart Label Creator

	text	Text data to replace
Error	**SIIPrinterException** is thrown when an error occurs while this method is being called. See "**4.2.3 SIIPrinterException Class**" for details on the error.	

Replaces the image object of the label file (*.sl).

Syntax		– (void)**replaceSmartLabelImageData:**(NSInteger)mapID image:(UIImage *)image;
Parameter	`mapID`	ID of the image object Specify the ID of the image object mapped on the label file (*.sl) of Smart Label Creator. The ID of the image object can be confirmed on the object pain of Smart Label Creator.
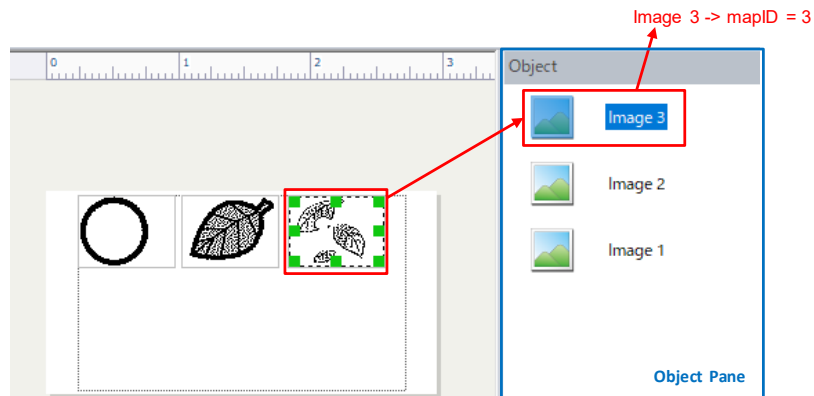
UI display of Smart Label Creator

	`image`	Image data to replace
Error		**SIIPrinterException** is thrown when an error occurs while this method is being called. See "**4.2.3 SIIPrinterException Class**" for details on the error.

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

Syntax   – (void)**replaceSmartLabelBarcodeData:**(NSInteger)mapID
                                               text:(NSString *)text

Parameter   `mapID`   ID of the barcode object
                                             Specify the ID of the barcode object mapped on the label file (*.sl)
                                             of Smart Label Creator. The ID of the barcode object can be
                                             confirmed on the object pain of Smart Label Creator.
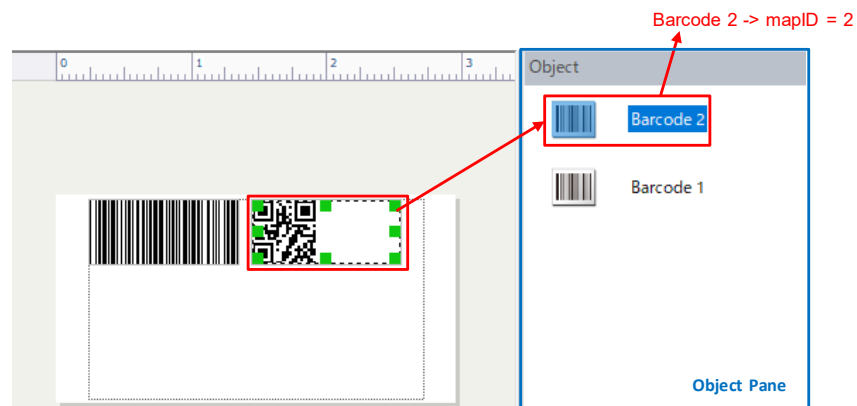
UI display of Smart Label Creator

                `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.

Error   **SIIPrinterException** is thrown when an error occurs while this method is being
                called.
                See "**4.2.3 SIIPrinterException Class**" for details on 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 SiiLibSample, a sample program in Xcode project format. This section describes the screen of SiiLibSample.
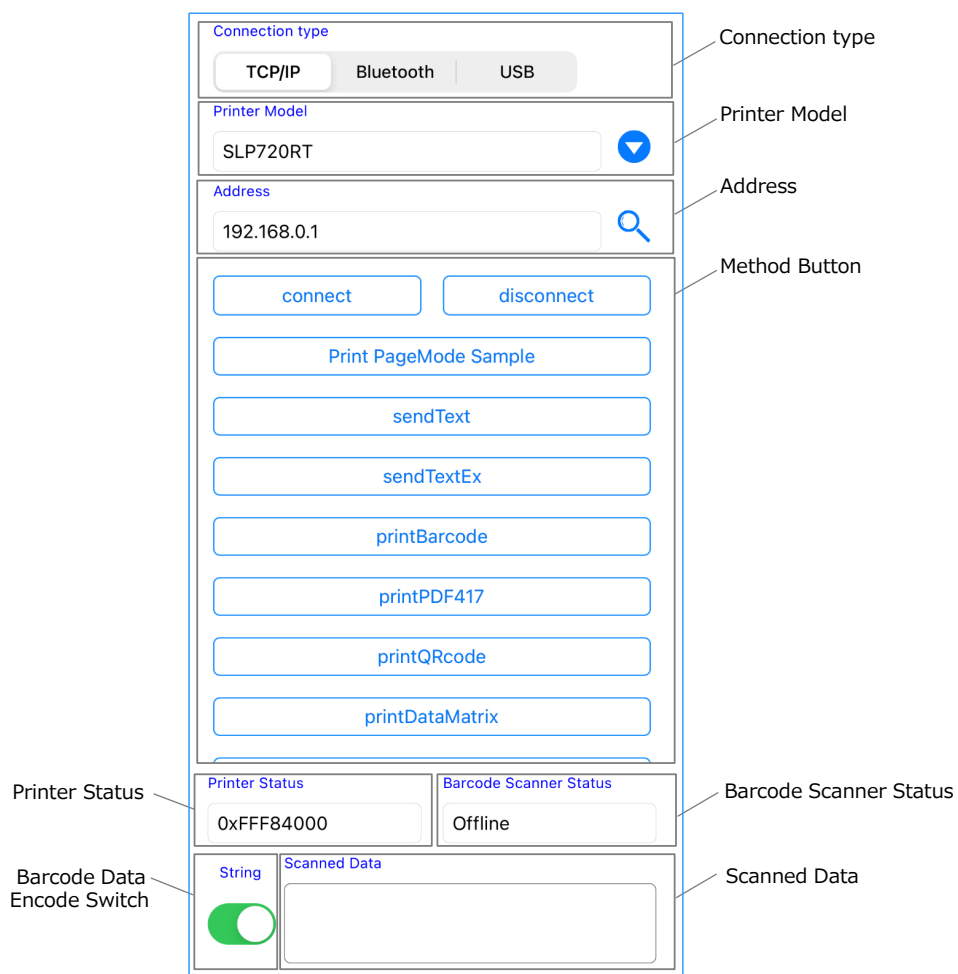
Item	Description
Connection type	Selects connection type to the printer.
Printer Model	Specifies the printer model. When tapping 🔽, a list of printer models is displayed. By selecting from the list, the printer model can be entered.
Address	Used to specify the printer address. For TCP/IP connection: After tapping 🔍, a list of the connectable printer IP address is displayed. By selecting a printer IP address from the list, the printer address can be selected.
Method Button	These buttons are for executing each method. In SiiLibSample, methods and properties of "4.2.1 `SIIPrinterManager` Class" are arranged. As the screen is scrolled, methods and properties not displayed can be seen. See "Chapter 4 Functions of the Library" for details of each method.
Printer Status	Displays the printer status. When `connect` succeeds, the latest status is displayed.
Barcode Scanner Status	Displays the connection status of the barcode scanner. SLP720RT/SLP721RT does not support the barcode scanner.
Barcode Data Encode Switch	Selects the barcode data encoded by the barcode scanner. SLP720RT/SLP721RT does not support the barcode scanner.
Scanned Data	Displays the barcode data scanned through the barcode scanner. SLP720RT/SLP721RT does not support the barcode scanner.

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 **SII_PM_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.

Figure A-1   SII_PM_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 ァ ィ ゥ ェ ォ ャ ュ ョ ッ
B0   － 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 ゛ ゜
E0
F0
```

Figure A-2   SII_PM_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 å ç ê ë è ï î ì Ä Å
90   É æ Æ ô ö ò û ù ÿ Ö Ü ø £ Ø × ƒ
A0   á í ó ú ñ Ñ ª º ¿ ® ¬ ½ ¼ ¡ « »
B0   ░ ▒ ▓ │ ┤ Á Â À © ╣ ║ ╗ ╝ ¢ ¥ ┐
C0   └ ┴ ┬ ├ ─ ┼ ã Ã ╚ ╔ ╩ ╦ ╠ ═ ╬ ¤
D0   ð Ð Ê Ë È ı Í Î Ï ┘ ┌ █ ▄ ¦ Ì ▀
E0   Ó ß Ô Ò õ Õ µ þ Þ Ú Û Ù ý Ý ¯ ´
F0   - ± ‗ ¾ ¶ § ÷ ¸ ° ¨ · ¹ ³ ² ■
```

Figure A-3   SII_PM_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 ₧ Ó
A0  á í ó ú ñ Ñ ª º ¿ Ò ¬ ½ ¼ ¡ « »
B0  ░ ▒ ▓ │ ┤ ╡ ╢ ╖ ╕ ╣ ║ ╗ ╝ ╜ ╛ ┐
C0  └ ┴ ┬ ├ ─ ┼ ╞ ╟ ╚ ╔ ╩ ╦ ╠ ═ ╬ ╧
D0  ╨ ╤ ╥ ╙ ╘ ╒ ╓ ╫ ╪ ┘ ┌ █ ▄ ▌ ▐ ▀
E0  α ß Γ π Σ σ µ τ Φ Θ Ω δ ∞ φ ε ∩
F0  ≡ ± ≥ ≤ ⌠ ⌡ ÷ ≈ ° • · √ ⁿ ² ■
```

Figure A-4   SII_PM_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 Â à ¶ ç ê ë è ï Î _ À §
90  É È Ê ô Ë Ï û ù ¤ Ô Ü ¢ £ Ũ Û ƒ
A0  ¦ ´ ó ú ¨ ³ ¯ Î ⌐ ¬ ½ ¼ ¾ « »
B0  ░ ▒ ▓ │ ┤ ╡ ╢ ╖ ╕ ╣ ║ ╗ ╝ ╜ ╛ ┐
C0  └ ┴ ┬ ├ ─ ┼ ╞ ╟ ╚ ╔ ╩ ╦ ╠ ═ ╬ ╧
D0  ╨ ╤ ╥ ╙ ╘ ╒ ╓ ╫ ╪ ┘ ┌ █ ▄ ▌ ▐ ▀
E0  α ß Γ π Σ σ µ τ Φ Θ Ω δ ∞ φ ε ∩
F0  ≡ ± ≥ ≤ ⌠ ⌡ ÷ ≈ ° • · √ ⁿ ² ■
```

Figure A-5   SII_PM_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	ƒ
A0	á	í	ó	ú	ñ	Ñ	ª	º	¿	⌐	¬	½	¼	¡	«	¤
B0	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C0	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D0	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
E0	α	ß	Γ	π	Σ	σ	µ	τ	Φ	θ	Ω	δ	∞	φ	ε	∩
F0	≡	±	≥	≤	⌠	⌡	÷	≈	°	•	·	√	ⁿ	²	■	

Figure A-6   SII_PM_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	ı	Ä	Å
90	É	æ	Æ	ô	ö	ò	û	ù	İ	Ö	Ü	ø	£	Ø	Ş	ş
A0	á	í	ó	ú	ñ	Ñ	Ğ	ğ	¿	®	¬	½	¼	¡	«	»
B0	░	▒	▓	│	┤	Á	Â	À	©	╣	║	╗	╝	¢	¥	┐
C0	└	┴	┬	├	─	┼	ã	Ã	╚	╔	╩	╦	╠	═	╬	¤
D0	º	ª	Ê	Ë	È		Í	Î	Ï	┘	┌	█	▄	¦	Ì	▀
E0	Ó	ß	Ô	Ò	õ	Õ	µ		×	Ú	Û	Ù	ì	ÿ	¯	´
F0	-	±		¾	¶	§	÷	¸	°	¨	·	¹	³	²	■	

Figure A-7   SII_PM_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	Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο	Π
90	Ρ	Σ	Τ	Υ	Φ	Χ	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	░	▒	▓	│	┤	╡	╢	╖	╕	╣	║	╗	╝	╜	╛	┐
C0	└	┴	┬	├	─	┼	╞	╟	╚	╔	╩	╦	╠	═	╬	╧
D0	╨	╤	╥	╙	╘	╒	╓	╫	╪	┘	┌	█	▄	▌	▐	▀
E0	ω	ά	έ	ή	ϊ	ί	ό	ύ	ϋ	ώ	Ά	Έ	Ή	Ί	Ό	Ύ
F0	Ώ	±	≥	≤	Ϊ	Ϋ	÷	≈	°	∙	·	√	ⁿ	²	■	

Figure A-8   SII_PM_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		¡	¢	£	¤	¥	¦	§	¨	©	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   SII_PM_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	Ї	ї	Ў	ў	°	•	·	√	№	¤	■	

Figure A-10 SII_PM_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	ů	ć	ç	ł	ë	Ő	ő	î	Ź	Ä	Ć
90	É	Ĺ	í	ô	ö	Ľ	ľ	Ś	ś	Ö	Ü	Ť	ť	Ł	×	č
A0	á	í	ó	ú	Ą	ą	Ž	ž	Ę	ę	¬	ź	Č	ş	«	»
B0	░	▒	▓	│	┤	Á	Â	Ě	Ş	╣	║	╗	╝	Ż	ż	┐
C0	└	┴	┬	├	─	┼	Ă	ă	╚	╔	╩	╦	╠	═	╬	¤
D0	đ	Đ	Ď	Ë	ď	Ň	Í	Î	ě	┘	┌	█	▄	Ţ	Ů	▀
E0	Ó	ß	Ô	Ń	ń	ň	Š	š	Ŕ	Ú	ŕ	Ű	ý	Ý	ţ	´
F0	-	˝	˛	ˇ	˘	§	÷	¸	°	¨	˙	ű	Ř	ř	■	

Figure A-11 SII_PM_CODE_PAGE_852 (Eastern Europe)

Figure A-12

```
      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 × ƒ
A0    á í ó ú ñ Ñ ª º ¿ ® ¬ ½ ¼ ¡ « »
B0    ▒ ▓ ▓ │ ┤ Á Â À © ╣ ║ ╗ ╝ ¢ ¥ ┐
C0    └ ┴ ┬ ├ ─ ┼ ã Ã ╚ ╔ ╩ ╦ ╠ ═ ╬ ¤
D0    ð Ð Ê Ë È € Í Î Ï ┘ ┌ █ ▄ ¦ Ì ▀
E0    Ó ß Ô Ò õ Õ µ þ Þ Ú Û Ù ý Ý ¯ ´
F0    - ± ‗ ¾ ¶ § ÷ ¸ ° ¨ · ¹ ³ ² ■
```

Figure A-12   SII_PM_CODE_PAGE_858 (Euro)

Figure A-13

```
      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 ў Ў џ Џ ю Ю ъ Ъ
A0    а А б Б ц Ц д Д е Е ф Ф г Г « »
B0    ▒ ▓ ▓ │ ┤ х Х и И ╣ ║ ╗ ╝ й Й ┐
C0    └ ┴ ┬ ├ ─ ┼ к К ╚ ╔ ╩ ╦ ╠ ═ ╬ ¤
D0    л Л м М н Н о О п ┘ ┌ █ ▄ П Я ▀
E0    Я р Р с С т Т у У ж Ж в В ь Ь №
F0    - ы Ы з З ш Ш э Э щ Щ ч Ч § ■
```

Figure A-13   SII_PM_CODE_PAGE_855 (Cyrillic)

Figure A-14   SII_PM_CODE_PAGE_864 (Arabic)

Figure A-15   SII_PM_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    ў ў Ј ¤ Ґ ¦ § Ё © Є « ¬ - ® Ї
B0  ° ± І і ґ µ ¶ · ё № є » 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   SII_PM_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    ΄ Ά £ ¤ ¥ ¦ § ¨ ©    « ¬ - ® —
B0  ° ± ² ³ ΄ µ ¶ · Έ Ή Ί » Ό ½ Ύ Ώ
C0  ΐ 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 Ϊ Ϋ ά έ ή ί
E0  ΰ 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 ϊ ϋ ό ύ ώ
```

Figure A-17   SII_PM_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	„	…	†	‡	ˆ	‰	Š	‹	Œ			
90		‘	’	“	”	•	–	—	~	™	š	›	œ			Ÿ
A0		¡	¢	£	¤	¥	¦	§	¨	©	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   SII_PM_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	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
COUNTRY_ITALY	#	$	@	°	\	é	^	ù	à	ò	è	ì
COUNTRY_SPAIN	Pt	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
COUNTRY_JAPAN	#	$	@	[	¥	]	^	`	{	|	}	~
COUNTRY_NORWAY	#	¤	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	¡	Ñ	¿	é	`	í	ñ	ó	ú
COUNTRY_LATIN_AMERICA	#	$	á	¡	Ñ	¿	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`

hriPosition = SII_PM_HRI_POSITION_BELOW

Length from the top of the barcode to the reference point

Height of the barcode image

Reference point

012345678905

Width of the barcode image

(1) Height of the barcode image

hriFont	hriPosition	Length from Top of Barcode to Reference Point	Height of Barcode Image
SII_PM_FONT_A	**SII_PM_HRI_NONE**	`moduleHeight`	`moduleHeight`
	SII_PM_HRI_POSITION_ABOVE	`moduleHeight` + 32	`moduleHeight` + 32
	SII_PM_HRI_POSITION_BELOW	`moduleHeight`	`moduleHeight` + 32
	SII_PM_HRI_POSITION_ABOVE_BELOW	`moduleHeight` + 64	`moduleHeight` + 64
SII_PM_FONT_B	**SII_PM_HRI_NONE**	`moduleHeight`	`moduleHeight`
	SII_PM_HRI_POSITION_ABOVE	`moduleHeight` + 24	`moduleHeight` + 24
	SII_PM_HRI_POSITION_BELOW	`moduleHeight`	`moduleHeight` + 24
	SII_PM_HRI_POSITION_ABOVE_BELOW	`moduleHeight` + 48	`moduleHeight` + 48

(2) Width of the barcode image

barcodeSymbol	moduleSize	Width of Barcode Image
SII_PM_BARCODE_UPC_A	**SII_PM_BARCODE_MODULE_WIDTH_2**	190
	SII_PM_BARCODE_MODULE_WIDTH_3	285
	SII_PM_BARCODE_MODULE_WIDTH_4	380
	SII_PM_BARCODE_MODULE_WIDTH_5	475
	SII_PM_BARCODE_MODULE_WIDTH_6	570
SII_PM_BARCODE_UPC_E	**SII_PM_BARCODE_MODULE_WIDTH_2**	102
	SII_PM_BARCODE_MODULE_WIDTH_3	153
	SII_PM_BARCODE_MODULE_WIDTH_4	204
	SII_PM_BARCODE_MODULE_WIDTH_5	255
	SII_PM_BARCODE_MODULE_WIDTH_6	306
SII_PM_BARCODE_EAN13	**SII_PM_BARCODE_MODULE_WIDTH_2**	190
	SII_PM_BARCODE_MODULE_WIDTH_3	285
	SII_PM_BARCODE_MODULE_WIDTH_4	380
	SII_PM_BARCODE_MODULE_WIDTH_5	475
	SII_PM_BARCODE_MODULE_WIDTH_6	570
SII_PM_BARCODE_JAN13	**SII_PM_BARCODE_MODULE_WIDTH_2**	190
	SII_PM_BARCODE_MODULE_WIDTH_3	285
	SII_PM_BARCODE_MODULE_WIDTH_4	380
	SII_PM_BARCODE_MODULE_WIDTH_5	475
	SII_PM_BARCODE_MODULE_WIDTH_6	570
SII_PM_BARCODE_EAN8	**SII_PM_BARCODE_MODULE_WIDTH_2**	134
	SII_PM_BARCODE_MODULE_WIDTH_3	201
	SII_PM_BARCODE_MODULE_WIDTH_4	268
	SII_PM_BARCODE_MODULE_WIDTH_5	335
	SII_PM_BARCODE_MODULE_WIDTH_6	402
SII_PM_BARCODE_JAN8	**SII_PM_BARCODE_MODULE_WIDTH_2**	134
	SII_PM_BARCODE_MODULE_WIDTH_3	201
	SII_PM_BARCODE_MODULE_WIDTH_4	268
	SII_PM_BARCODE_MODULE_WIDTH_5	335
	SII_PM_BARCODE_MODULE_WIDTH_6	402
SII_PM_BARCODE_CODE93	**SII_PM_BARCODE_MODULE_WIDTH_2**	18 × number of barcode data + 56
	SII_PM_BARCODE_MODULE_WIDTH_3	27 × number of barcode data + 84
	SII_PM_BARCODE_MODULE_WIDTH_4	36 × number of barcode data + 112
	SII_PM_BARCODE_MODULE_WIDTH_5	45 × number of barcode data + 140
	SII_PM_BARCODE_MODULE_WIDTH_6	54 × number of barcode data + 168
SII_PM_BARCODE_CODE128	**SII_PM_BARCODE_MODULE_WIDTH_2**	22 × number of barcode data + 26
	SII_PM_BARCODE_MODULE_WIDTH_3	33 × number of barcode data + 39
	SII_PM_BARCODE_MODULE_WIDTH_4	44 × number of barcode data + 52
	SII_PM_BARCODE_MODULE_WIDTH_5	55 × number of barcode data + 65
	SII_PM_BARCODE_MODULE_WIDTH_6	66 × number of barcode data + 78

barcodeSymbol	moduleSize	Width of Barcode Image
SII_PM_BARCODE_GS1_OMNI_DIRECTIONAL	SII_PM_BARCODE_MODULE_WIDTH_2	192
	SII_PM_BARCODE_MODULE_WIDTH_3	288
	SII_PM_BARCODE_MODULE_WIDTH_4	384
	SII_PM_BARCODE_MODULE_WIDTH_5	480
	SII_PM_BARCODE_MODULE_WIDTH_6	576
SII_PM_BARCODE_GS1_TRUNCATED	SII_PM_BARCODE_MODULE_WIDTH_2	192
	SII_PM_BARCODE_MODULE_WIDTH_3	288
	SII_PM_BARCODE_MODULE_WIDTH_4	384
	SII_PM_BARCODE_MODULE_WIDTH_5	480
	SII_PM_BARCODE_MODULE_WIDTH_6	576
SII_PM_BARCODE_GS1_LIMITED	SII_PM_BARCODE_MODULE_WIDTH_2	158
	SII_PM_BARCODE_MODULE_WIDTH_3	237
	SII_PM_BARCODE_MODULE_WIDTH_4	316
	SII_PM_BARCODE_MODULE_WIDTH_5	395
	SII_PM_BARCODE_MODULE_WIDTH_6	474
SII_PM_BARCODE_GS1_EXPANDED[1]	SII_PM_BARCODE_MODULE_WIDTH_2	number of barcode module × 2
	SII_PM_BARCODE_MODULE_WIDTH_3	number of barcode module × 3
	SII_PM_BARCODE_MODULE_WIDTH_4	number of barcode module × 4
	SII_PM_BARCODE_MODULE_WIDTH_5	number of barcode module × 5
	SII_PM_BARCODE_MODULE_WIDTH_6	number of barcode module × 6

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

barcodeSymbol	nwRatio	moduleSize	Width of Barcode Image
SII_PM_BARCODE_ CODE39	SII_PM_NWRATIO_ 1TO2	SII_PM_BARCODE_MODULE _WIDTH_2	26 × number of barcode data + 50
		SII_PM_BARCODE_MODULE _WIDTH_3	39 × number of barcode data + 75
		SII_PM_BARCODE_MODULE _WIDTH_4	52 × number of barcode data + 100
		SII_PM_BARCODE_MODULE _WIDTH_5	65 × number of barcode data + 125
		SII_PM_BARCODE_MODULE _WIDTH_6	78 × number of barcode data + 150
	SII_PM_NWRATIO_ 1TO2_5	SII_PM_BARCODE_MODULE _WIDTH_2	29 × number of barcode data + 56
		SII_PM_BARCODE_MODULE _WIDTH_3	45 × number of barcode data + 87
		SII_PM_BARCODE_MODULE _WIDTH_4	58 × number of barcode data + 112
		SII_PM_BARCODE_MODULE _WIDTH_5	74 × number of barcode data + 143
		SII_PM_BARCODE_MODULE _WIDTH_6	87 × number of barcode data + 168
	SII_PM_NWRATIO_ 1TO3	SII_PM_BARCODE_MODULE _WIDTH_2	32 × number of barcode data + 62
		SII_PM_BARCODE_MODULE _WIDTH_3	48 × number of barcode data + 93
		SII_PM_BARCODE_MODULE _WIDTH_4	64 × number of barcode data + 124
		SII_PM_BARCODE_MODULE _WIDTH_5	80 × number of barcode data + 155
		SII_PM_BARCODE_MODULE _WIDTH_6	96 × number of barcode data + 186
SII_PM_BARCODE_ ITF	SII_PM_NWRATIO_ 1TO2	SII_PM_BARCODE_MODULE _WIDTH_2	14 × number of barcode data + 16
		SII_PM_BARCODE_MODULE _WIDTH_3	21 × number of barcode data + 24
		SII_PM_BARCODE_MODULE _WIDTH_4	28 × number of barcode data + 32
		SII_PM_BARCODE_MODULE _WIDTH_5	35 × number of barcode data + 40
		SII_PM_BARCODE_MODULE _WIDTH_6	42 × number of barcode data + 48
	SII_PM_NWRATIO_ 1TO2_5	SII_PM_BARCODE_MODULE _WIDTH_2	16 × number of barcode data + 17
		SII_PM_BARCODE_MODULE _WIDTH_3	25 × number of barcode data + 26
		SII_PM_BARCODE_MODULE _WIDTH_4	32 × number of barcode data + 34

barcodeSymbol	nwRatio	moduleSize	Width of Barcode Image
SII_PM_BARCODE_ ITF	SII_PM_NWRATIO_ 1TO2_5	SII_PM_BARCODE_MODULE _WIDTH_5	41 × number of barcode data + 43
		SII_PM_BARCODE_MODULE _WIDTH_6	48 × number of barcode data + 51
	SII_PM_NWRATIO_ 1TO3	SII_PM_BARCODE_MODULE _WIDTH_2	18 × number of barcode data + 18
		SII_PM_BARCODE_MODULE _WIDTH_3	27 × number of barcode data + 27
		SII_PM_BARCODE_MODULE _WIDTH_4	36 × number of barcode data + 36
		SII_PM_BARCODE_MODULE _WIDTH_5	45 × number of barcode data + 45
		SII_PM_BARCODE_MODULE _WIDTH_6	54 × number of barcode data + 54
SII_PM_BARCODE_ CODABAR[*1]	SII_PM_NWRATIO_ 1TO2	SII_PM_BARCODE_MODULE _WIDTH_2	20 × number of data + 2 × (2 + number of wide data) - 2
		SII_PM_BARCODE_MODULE _WIDTH_3	30 × number of data + 3 × (2 + number of wide data) - 3
		SII_PM_BARCODE_MODULE _WIDTH_4	40 × number of data + 4 × (2 + number of wide data) - 4
		SII_PM_BARCODE_MODULE _WIDTH_5	50 × number of data + 5 × (2 + number of wide data) - 5
		SII_PM_BARCODE_MODULE _WIDTH_6	60 × number of data + 6 × (2 + number of wide data) - 6
	SII_PM_NWRATIO_ 1TO2_5	SII_PM_BARCODE_MODULE _WIDTH_2	22 × number of data + 3 × (2 + number of wide data) - 2
		SII_PM_BARCODE_MODULE _WIDTH_3	34 × number of data + 5 × (2 + number of wide data) - 3
		SII_PM_BARCODE_MODULE _WIDTH_4	44 × number of data + 6 × (2 + number of wide data) - 4
		SII_PM_BARCODE_MODULE _WIDTH_5	56 × number of data + 8 × (2 + number of wide data) - 5
		SII_PM_BARCODE_MODULE _WIDTH_6	66 × number of data + 9 × (2 + number of wide data) - 6
	SII_PM_NWRATIO_ 1TO3	SII_PM_BARCODE_MODULE _WIDTH_2	24 × number of data + 4 × (2 + number of wide data) - 2
		SII_PM_BARCODE_MODULE _WIDTH_3	36 × number of data + 6 × (2 + number of wide data) - 3
		SII_PM_BARCODE_MODULE _WIDTH_4	48 × number of data + 8 × (2 + number of wide data) - 4
		SII_PM_BARCODE_MODULE _WIDTH_5	60 × number of data + 10 × (2 + number of wide data) - 5
		SII_PM_BARCODE_MODULE _WIDTH_6	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 ": / . +".

barcodeSymbol	Number of Data	moduleSize	Width of Barcode Image
SII_PM_BARCODE_ EAN13_ADDON	14 or 15	**SII_PM_BARCODE_MODULE_WIDTH_2**	244
		SII_PM_BARCODE_MODULE_WIDTH_3	366
		SII_PM_BARCODE_MODULE_WIDTH_4	488
		SII_PM_BARCODE_MODULE_WIDTH_5	610
		SII_PM_BARCODE_MODULE_WIDTH_6	732
	17 or 18	**SII_PM_BARCODE_MODULE_WIDTH_2**	298
		SII_PM_BARCODE_MODULE_WIDTH_3	447
		SII_PM_BARCODE_MODULE_WIDTH_4	596
		SII_PM_BARCODE_MODULE_WIDTH_5	745
		SII_PM_BARCODE_MODULE_WIDTH_6	894
SII_PM_BARCODE_ JAN13_ADDON	14 or 15	**SII_PM_BARCODE_MODULE_WIDTH_2**	244
		SII_PM_BARCODE_MODULE_WIDTH_3	366
		SII_PM_BARCODE_MODULE_WIDTH_4	488
		SII_PM_BARCODE_MODULE_WIDTH_5	610
		SII_PM_BARCODE_MODULE_WIDTH_6	732
	17 or 18	**SII_PM_BARCODE_MODULE_WIDTH_2**	298
		SII_PM_BARCODE_MODULE_WIDTH_3	447
		SII_PM_BARCODE_MODULE_WIDTH_4	596
		SII_PM_BARCODE_MODULE_WIDTH_5	745
		SII_PM_BARCODE_MODULE_WIDTH_6	894

B.1.2 `printPDF417`

(1) Height of the barcode image

Height of the barcode image[1] = `moduleHeight` × `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 `pdf417Symol` is **SII_PM_PDF417_STANDARD**:

Width of the barcode image = (17 × `column`[1] + 69) × module size value

   [1]: $\text{column} \neq 0$

When `pdf417Symol` is **SII_PM_PDF417_COMPACT**:

Width of the barcode image = (17 × `column`[1] + 35) × module size value

   [1]: $\text{column} \neq 0$

Module Size Value

`moduleSize`	Module Size Value
SII_PM_PDF417_MODULE_WIDTH_2	2
SII_PM_PDF417_MODULE_WIDTH_3	3
SII_PM_PDF417_MODULE_WIDTH_4	4
SII_PM_PDF417_MODULE_WIDTH_5	5
SII_PM_PDF417_MODULE_WIDTH_6	6
SII_PM_PDF417_MODULE_WIDTH_7	7
SII_PM_PDF417_MODULE_WIDTH_8	8

B.1.3 `printQRCode`

Length from the top of the barcode to the reference point

Height of the barcode image

Reference point

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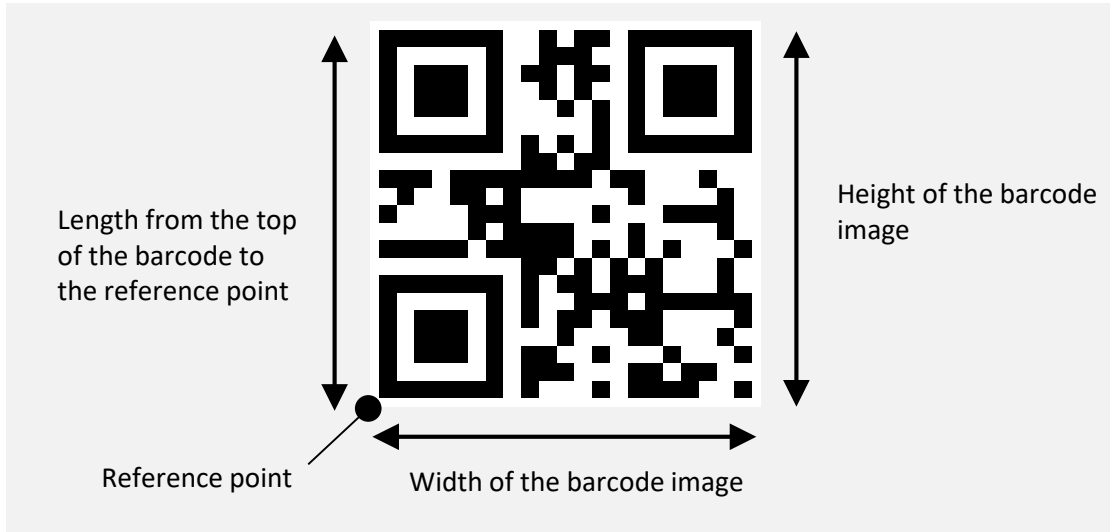
(1) Height and width of the barcode image

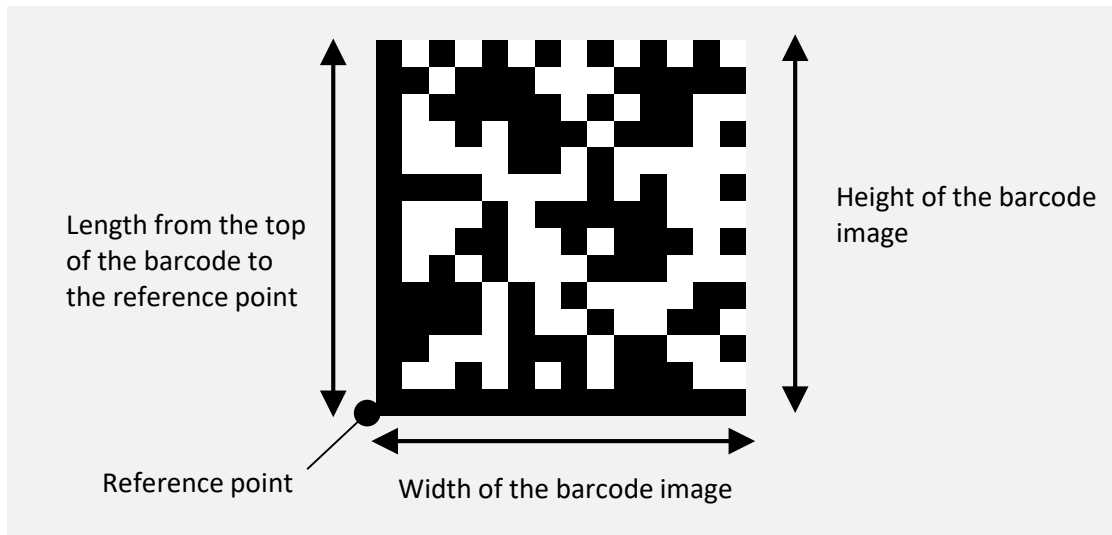Height[1] and width of the barcode image = (4 × version[2] + 17) × module size value

[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

`moduleSize`	Module Size Value
SII_PM_QR_MODULE_SIZE_2	2
SII_PM_QR_MODULE_SIZE_3	3
SII_PM_QR_MODULE_SIZE_4	4
SII_PM_QR_MODULE_SIZE_5	5
SII_PM_QR_MODULE_SIZE_6	6
SII_PM_QR_MODULE_SIZE_7	7
SII_PM_QR_MODULE_SIZE_8	8
SII_PM_QR_MODULE_SIZE_9	9
SII_PM_QR_MODULE_SIZE_10	10
SII_PM_QR_MODULE_SIZE_11	11
SII_PM_QR_MODULE_SIZE_12	12
SII_PM_QR_MODULE_SIZE_13	13
SII_PM_QR_MODULE_SIZE_14	14
SII_PM_QR_MODULE_SIZE_15	15
SII_PM_QR_MODULE_SIZE_16	16

B.1.4 `printDataMatrix`

Length from the top of the barcode to the reference point

Height of the barcode image

Reference point

Width of the barcode image

(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

`dataMatrixModule`	Number of Vertical Module	Number of Horizontal Module
SII_PM_DATA_MATRIX_10_10	10	10
SII_PM_DATA_MATRIX_12_12	12	12
SII_PM_DATA_MATRIX_14_14	14	14
SII_PM_DATA_MATRIX_16_16	16	16
SII_PM_DATA_MATRIX_18_18	18	18
SII_PM_DATA_MATRIX_20_20	20	20
SII_PM_DATA_MATRIX_22_22	22	22
SII_PM_DATA_MATRIX_24_24	23	23
SII_PM_DATA_MATRIX_26_26	26	26
SII_PM_DATA_MATRIX_32_32	32	32
SII_PM_DATA_MATRIX_36_36	36	36
SII_PM_DATA_MATRIX_40_40	40	40
SII_PM_DATA_MATRIX_44_44	44	44
SII_PM_DATA_MATRIX_48_48	48	48
SII_PM_DATA_MATRIX_52_52	52	52
SII_PM_DATA_MATRIX_64_64	64	64
SII_PM_DATA_MATRIX_72_72	72	72
SII_PM_DATA_MATRIX_80_80	80	80
SII_PM_DATA_MATRIX_88_88	88	88
SII_PM_DATA_MATRIX_96_96	96	96
SII_PM_DATA_MATRIX_104_104	104	104
SII_PM_DATA_MATRIX_120_120	120	120

dataMatrixModule	Number of Vertical Module	Number of Horizontal Module
SII_PM_DATA_MATRIX_132_132	132	132
SII_PM_DATA_MATRIX_144_144	144	144
SII_PM_DATA_MATRIX_8_18	8	18
SII_PM_DATA_MATRIX_8_32	8	32
SII_PM_DATA_MATRIX_12_26	12	26
SII_PM_DATA_MATRIX_12_36	12	36
SII_PM_DATA_MATRIX_16_36	16	36
SII_PM_DATA_MATRIX_16_48	16	48

Module Size Value

moduleSize	Module Size Value
SII_PM_DATAMATRIX_MODULE_SIZE_2	2
SII_PM_DATAMATRIX_MODULE_SIZE_3	3
SII_PM_DATAMATRIX_MODULE_SIZE_4	4
SII_PM_DATAMATRIX_MODULE_SIZE_5	5
SII_PM_DATAMATRIX_MODULE_SIZE_6	6
SII_PM_DATAMATRIX_MODULE_SIZE_7	7
SII_PM_DATAMATRIX_MODULE_SIZE_8	8
SII_PM_DATAMATRIX_MODULE_SIZE_9	9
SII_PM_DATAMATRIX_MODULE_SIZE_10	10
SII_PM_DATAMATRIX_MODULE_SIZE_11	11
SII_PM_DATAMATRIX_MODULE_SIZE_12	12
SII_PM_DATAMATRIX_MODULE_SIZE_13	13
SII_PM_DATAMATRIX_MODULE_SIZE_14	14
SII_PM_DATAMATRIX_MODULE_SIZE_15	15
SII_PM_DATAMATRIX_MODULE_SIZE_16	16

B.1.5 `printMaxicode`
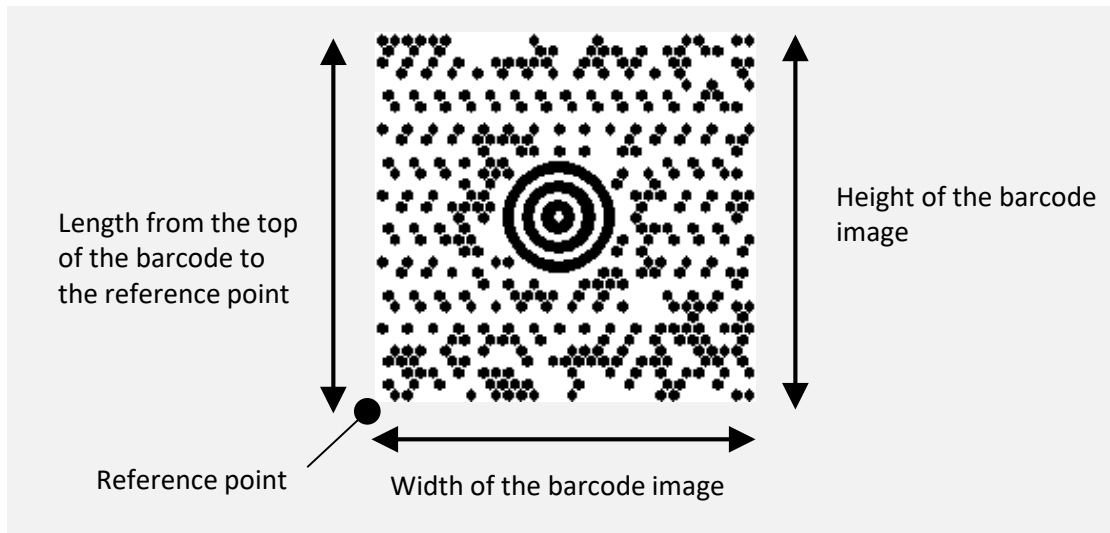
(1) Height of the barcode image
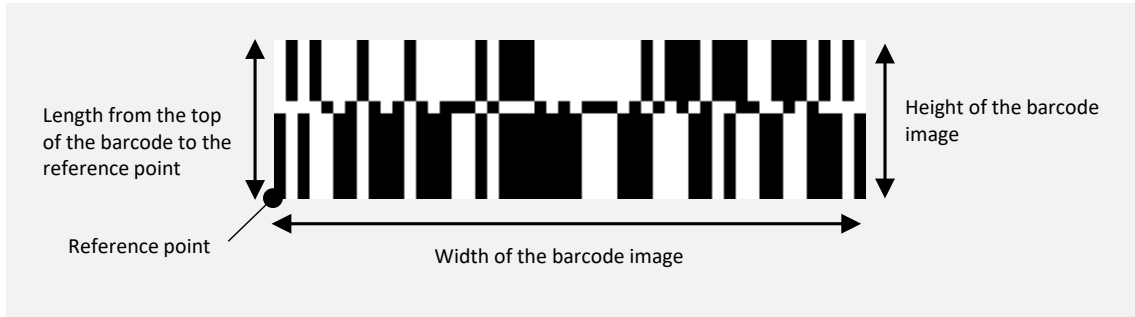
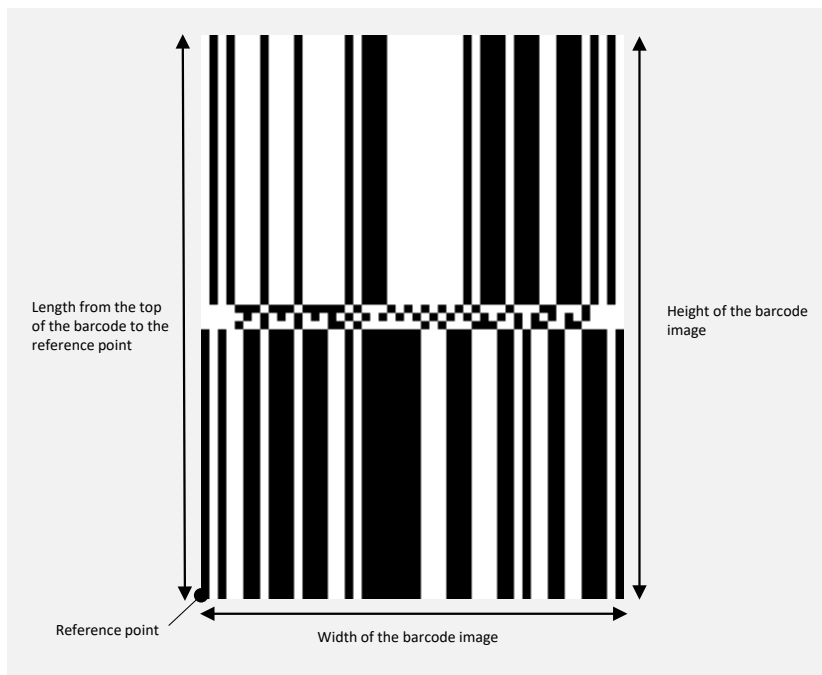Height of the barcode image^{*1} = 200

*1: 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`

Length from the top of the barcode to the reference point

Height of the barcode image

Reference point

Width of the barcode image

(1) Height and width of the barcode image
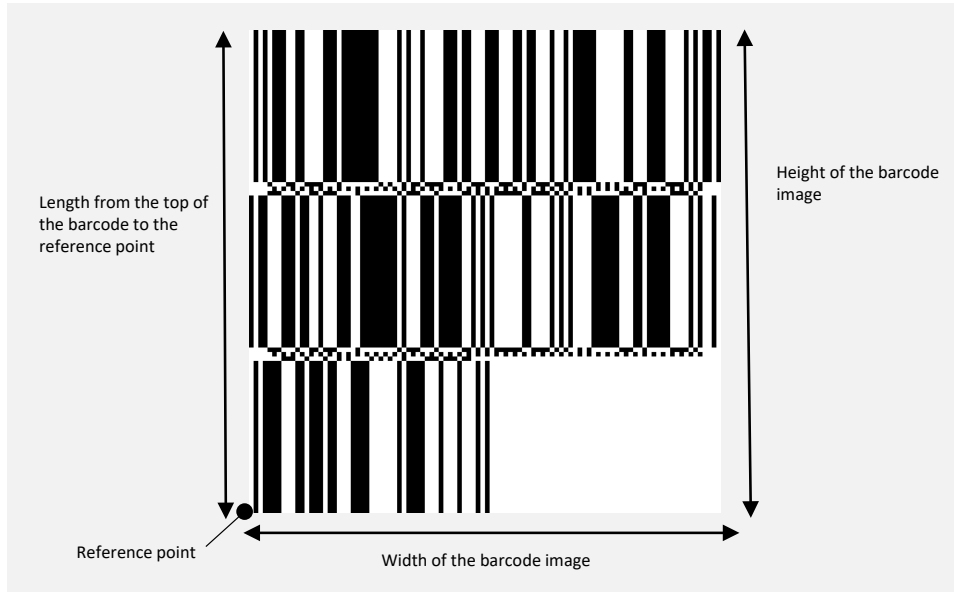
Height of the barcode image[1] = 13 × module size value

*1: 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

moduleSize	Module Size Value
SII_PM_GS1DATABAR_MODULE_SIZE_2	2
SII_PM_GS1DATABAR_MODULE_SIZE_3	3
SII_PM_GS1DATABAR_MODULE_SIZE_4	4
SII_PM_GS1DATABAR_MODULE_SIZE_5	5
SII_PM_GS1DATABAR_MODULE_SIZE_6	6
SII_PM_GS1DATABAR_MODULE_SIZE_7	7
SII_PM_GS1DATABAR_MODULE_SIZE_8	8
SII_PM_GS1DATABAR_MODULE_SIZE_9	9
SII_PM_GS1DATABAR_MODULE_SIZE_10	10
SII_PM_GS1DATABAR_MODULE_SIZE_11	11
SII_PM_GS1DATABAR_MODULE_SIZE_12	12
SII_PM_GS1DATABAR_MODULE_SIZE_13	13
SII_PM_GS1DATABAR_MODULE_SIZE_14	14
SII_PM_GS1DATABAR_MODULE_SIZE_15	15
SII_PM_GS1DATABAR_MODULE_SIZE_16	16

B.1.7 `printGS1DataBarStackedOmnidirectional`

(1) Height and width of the barcode image

Height of the barcode image[*1] = ($\texttt{moduleHeight} \times 2 + 3$) × module size value

*1: 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

moduleSize	Module Size Value
SII_PM_GS1DATABAR_MODULE_SIZE_2	2
SII_PM_GS1DATABAR_MODULE_SIZE_3	3
SII_PM_GS1DATABAR_MODULE_SIZE_4	4
SII_PM_GS1DATABAR_MODULE_SIZE_5	5
SII_PM_GS1DATABAR_MODULE_SIZE_6	6
SII_PM_GS1DATABAR_MODULE_SIZE_7	7
SII_PM_GS1DATABAR_MODULE_SIZE_8	8
SII_PM_GS1DATABAR_MODULE_SIZE_9	9
SII_PM_GS1DATABAR_MODULE_SIZE_10	10
SII_PM_GS1DATABAR_MODULE_SIZE_11	11
SII_PM_GS1DATABAR_MODULE_SIZE_12	12
SII_PM_GS1DATABAR_MODULE_SIZE_13	13
SII_PM_GS1DATABAR_MODULE_SIZE_14	14
SII_PM_GS1DATABAR_MODULE_SIZE_15	15
SII_PM_GS1DATABAR_MODULE_SIZE_16	16

B.1.8 `printGS1DataBarExpandedStacked`

(1) Height and width of the barcode image

Height of the barcode image[1] = ((34 + 3) × number of row[2] + 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

`moduleSize`	Module Size Value
SII_PM_GS1DATABAR_MODULE_SIZE_2	2
SII_PM_GS1DATABAR_MODULE_SIZE_3	3
SII_PM_GS1DATABAR_MODULE_SIZE_4	4
SII_PM_GS1DATABAR_MODULE_SIZE_5	5
SII_PM_GS1DATABAR_MODULE_SIZE_6	6
SII_PM_GS1DATABAR_MODULE_SIZE_7	7
SII_PM_GS1DATABAR_MODULE_SIZE_8	8
SII_PM_GS1DATABAR_MODULE_SIZE_9	9
SII_PM_GS1DATABAR_MODULE_SIZE_10	10
SII_PM_GS1DATABAR_MODULE_SIZE_11	11
SII_PM_GS1DATABAR_MODULE_SIZE_12	12
SII_PM_GS1DATABAR_MODULE_SIZE_13	13
SII_PM_GS1DATABAR_MODULE_SIZE_14	14
SII_PM_GS1DATABAR_MODULE_SIZE_15	15
SII_PM_GS1DATABAR_MODULE_SIZE_16	16

Appendix C
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