SII

IFM/PTM Series
Printer Driver
Operations Manual

Seiko Instruments Inc.

Table of contents

1.   Introduction

1.1   Overview
This document describes the specifications, functions, and operating instructions of the software for Microsoft Windows that Seiko Instruments Inc. (hereinafter referred to as "SII") provides for SII thermal printers.

1.2   Operating Description
Operating instructions and screenshots described in this document are explained assuming that the operating system uses standard settings as installed.
The operating instructions and screenshots may be different if the operating system setting has been changed.

1.3   Operating System Abbreviations
Operating systems described in this document are written as follows:
- ❑ Overall Microsoft® Windows®   =>   Windows
- ❑ Microsoft® Windows® 11   =>   Windows 11
- ❑ Microsoft® Windows® 10   =>   Windows 10
- ❑ Microsoft® Windows Server® 2019   =>   Windows 10 (Windows Server 2019)
- ❑ Microsoft® Windows Server® 2016   =>   Windows 10 (Windows Server 2016)
- ❑ Microsoft® Windows® 8.1   =>   Windows 8.1
- ❑ Microsoft® Windows Server® 2012   =>   Windows Server 2012

When an individual description is necessary, the description is written in parentheses behind the abbreviation.

1.4   Printer Folder Representation
The printer folder described in this document means the folder displayed for the following operations:
[Control Panel] => [Hardware and Sound] => [Devices and Printers] folder

1.5 Other Representations

The terms used in this document are listed below:

Terms	Description
Printer driver	Printer driver included in the provided software
Communication library	A dynamic library file included in the provided software to be incorporated into user applications for communicating with the printer.
Product technical reference	Technical references of interface boards or chipsets for the each products
Function settings	Features of [Function Settings] explained in the Product Technical Reference
ASB	Printer status response retrieved by the [Automatic Status Back Enable/Disable] command of the printer

1.6 Applicable Product Models and Driver Models

Products (Interface or CPU) that the printer driver supports are listed below.

Product Name	Mechanism Model	Driver Model
IFM201-01UK-E IFM201-01SK-E (Interface)	CAPM347	SII IFM20x
PTM20P01-E (CPU)	CAPM347	SII PTM20

※ The CPU type only works in standard mode for printing.
(This feature select in [Advanced Options] is not displayed.)
Other features and the specifications are common regardless of the driver models.

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2.   Operating Environment

2.1   System Requirements

System requirements for the printer driver are as follows:

Item	Specifications
Supported Operating Systems	■ Windows 11 (64 bit) ■ Windows 10 (32 bit and 64 bit) ■ Windows Server 2019 (64 bit) ■ Windows Server 2016 (64 bit) ■ Windows 8.1 (32 bit and 64 bit) ■ Windows Server 2012 (64 bit) Modern UI is not supported.
Communication Methods	■ USB Communication ■ Serial Communication (RS-232C)

2.2　Function Settings

Conditions of function settings for using the printer driver are as follows:
- ❑ To use the printer driver, the following items of the function settings require the specified settings listed below.
- ❑ The printer driver and the communication library may not work properly when the other feature other than the specified settings below is set.
- ❑ About how to change the function settings, refer to "※
- ❑ For Windows Server 2019, 2016 and 2012, the communication settings cannot be set by the [Configure Port] button. Set the communication settings from [Ports (COM & LPT)] in the [Device Manager] on the computer.

- ❑ Device Setting Tab".

DIP No.	Item	Settings
DIP5 – 1	Automatic status response selection	0: Enable *1
DIP5 – 2	Initialization response	0: Enable *2
DIP5 – 3	Print data handling when an error occurs	1: Disable
DIP40 – 1, 2	Baud rate	11: 115200
DIP40 – 5, 6	Data control	01: Busy *1
DIP40 – 7	Host busy	0: CTS
DIP40 – 8	Break signal	1: RxD *1

*1: Required setting to work printer driver.
*2: Required setting to use the "GetSiiPrinterData" function on communication library.

2.3　Notes

- ※ The fonts implemented on the printer can not be printed by the printer driver.
- ※ Printing features are applicable for the network connection via the shared printer function as well.
  (The features using communication library are applicable only for locally connected printers.)
- ※ The multi user environment using the [Switch user] function for logging off is not supported.
- ※ When the paper width set by the printer and the printer driver differs, the contents of printing may collapse.
- ※ A sleep mode of the standard feature of Windows isn't supported.

3. Installation

3.1 Overview

This chapter describes the installation of the printer driver.
There are the following installation methods.

- Installation from [Add Printer] in the [Printer folder]
- Installation from the dedicated installer

This chapter only describes the installation from the dedicated installer.

Caution

◆ This installation requires logon to the computer with administrator privileges.
◆ The [Windows Logo Test] warning may be displayed during installation, but proceed with the installation.
◆ When you want to use the Communication library or its .NET API in WOW64 environment, install the printer driver from the dedicated installer.

Reference

● When the printer driver is no longer needed, select [Printer Driver for SII IFM Series] from [Programs and Features] in the Control Panel, and then uninstall it.

3.2   New Installation Methods

This section describes the new installation method.
Start the setup program (SetupPrinter64.exe).

```
╔════ Caution ════════════════════════════════════╗
║  ◆ Do not install more than one driver for the same communication port.  ║
╚═════════════════════════════════════════════════╝
```

3.2.1   Common Installation Procedure

This section describes the procedure of starting installation used for every connection.
1.   When the [Installer start] window is displayed, click the [Next>] button.
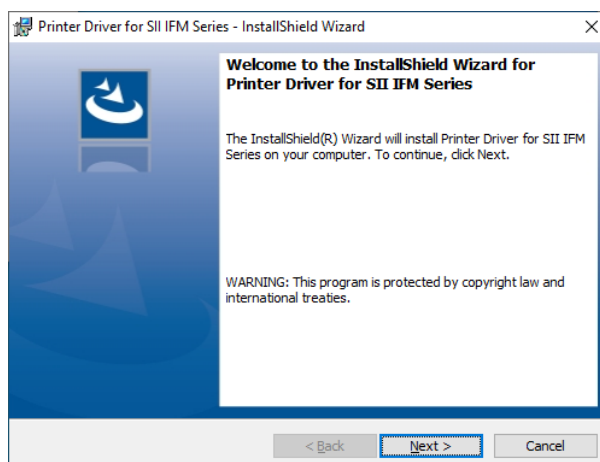

Figure 3-1   [Installer start] window

2.   When the [SOFTWARE LICENSE AGREEMENT] is displayed, read it carefully, select "I accept the terms in the license agreement", and then click the [Next>] button.
3.   When the [Installation confirmation] window is displayed, click [Install] button.
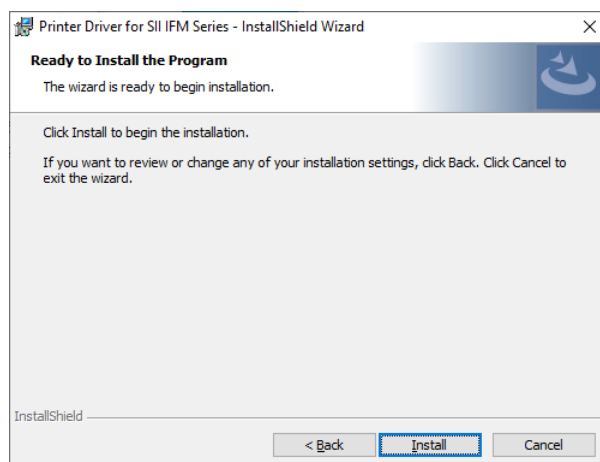
Figure 3-2   [Installation confirmation] window

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The subsequent procedure varies depending on the connection method with the printer. For the USB connection, proceed to "3.2.2 Installation with USB Connection". For the serial connection, proceed to "3.2.3 Installation with Serial Connection". For using shared printer, proceed to "3.2.4 Installation of the Shared Printer".

3.2.2 Installation with USB Connection
This section describes the installation procedure of the USB connection.

```
══ Caution ══
◆ For the USB connection, keep the printer power off until you are instructed to do so
  in this manual.
```

4. When the [Installation format selection] window is displayed, select "Plug and play install (Uses USB port)", and then click the [Install] button.
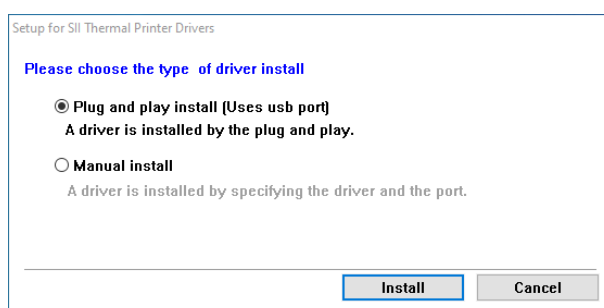
Figure 3-3   [Installation format selection] window (USB connection)

5. When the [Completion] window is displayed, use the USB cable to connect the printer with the computer, and then turn on the printer power.
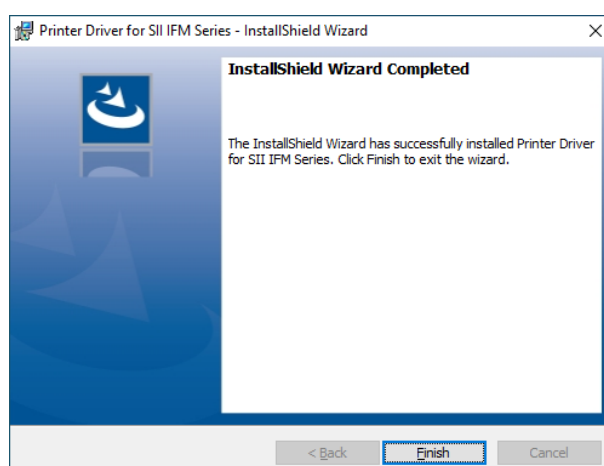
Figure 3-4   [Completion] window (USB connection)

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6. After the printer is recognized by the computer, the printer driver is automatically installed by the plug and play.

Caution

◆ When you remove the USB cable after the printer driver was successfully installed, connect it to the same USB port that you used to install the driver when you want to reconnect it. When the printer is connected to a different USB port on the computer, the host recognizes it as another printer, and again prompts for printer driver installation.

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3.2.3 Installation with Serial Connection

This section describes the installation procedure of the serial connection.

4. When the [Installation format selection] window is displayed, select "Manual install". Select the driver to install and the connection port, and then click the [Install] button to start installation.

Figure 3-5   [Installation format selection] window (serial connection)

5. When the installation of the printer driver is completed, the [Completion] window is displayed.
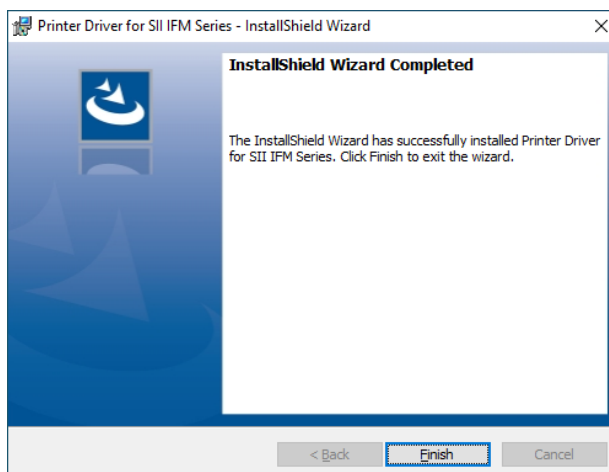
Figure 3-6   [Completion] window (serial connection)

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3.2.4 Installation of the Shared Printer
This section describes the installation procedure of the shared printer.
4. When the [Installation format selection] window is displayed, select "Manual install" and "Add New Port...".
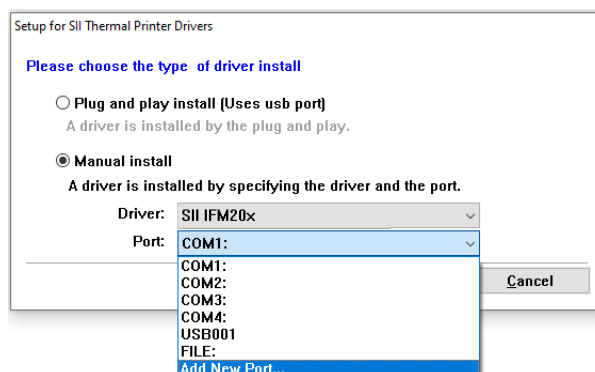
Figure 3-7 [Installation format selection] window (shared printer)

5. When the [New port creation] window is displayed, select "Network Printer Port" and specify [Printer], and then click the [OK] button to add the port to the port list on the installation format selection window.
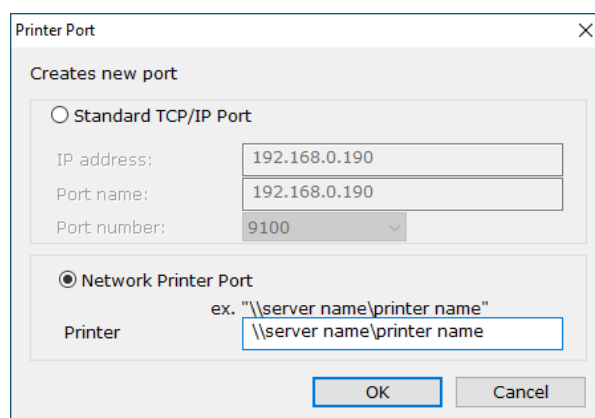
Figure 3-8 [New port creation] window

6. When the [Installation format selection] window is displayed again, select the driver to install and the connection port, and then click the [Install] button to start installation.

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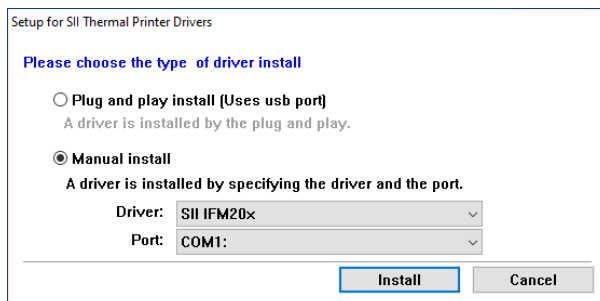
7. When the installation of the printer driver is completed, the [Completion] window is displayed.
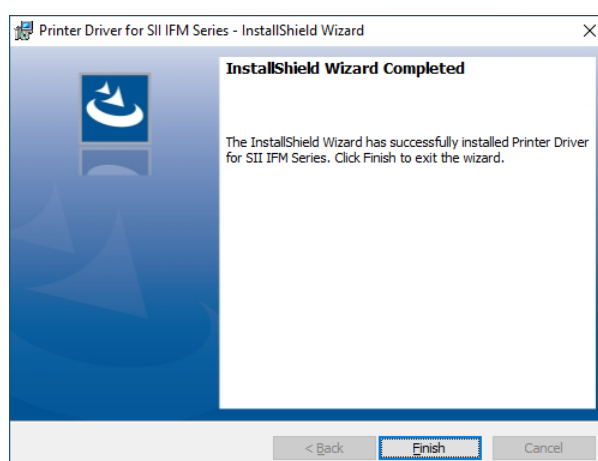
Figure 3-9   [Completion] window (shared printer)

4. Printing Preferences

4.1 Overview
Settings for paper and printing control can be set on the [Printing Preferences] window.
When printing from Modern UI design, only a part of configurable items is displayed in [Printing Preferences] window.

4.2 Printing Preferences Window
To display the [Printing Preferences] window, follow the steps below.
1. Right-click the printer icon in the printer folder to display the sub-menu.
2. Click [Printing Preferences] on the sub-menu to display [Printing Preferences].

4.3 Advanced Options
Advanced printing preferences can be changed from the [Advanced Options] window.
To display the [Advanced Options] window, follow the steps below.
1. Display [Printing Preferences] window mentioned in "4.2 Printing Preferences Window".
2. Click [Advanced…] in the lower right of the [Printing Preferences] window to display the [Advanced Options] window.

4.3.1 Paper Size
Select the paper size for printing.
For instructions to add a new paper size, refer to "6.5 How to Add a New Paper Size".

4.3.2 Copy Count
Specify the number of copies to print.

4.3.3 Half toning
Select the method of print image to binarize.

4.3.4 Print Density
Select the print density level controlled on the printer.

4.3.5 Form Discharge
Select the form discharge operation after printing.
- ◆ Enable: Paper is discharged to the selected paper size.
- ◆ Disable: Paper is discharged to the end of image regardless of the selected paper size.
  The upper limit of the paper discharging shall be the selected paper size.
- ※ When using marked paper, be sure to select [Disable].
- ※ The paper feed operation before and after cutting depends on the [
- ※ Cutter Control]
  settings.
- ※ The table below indicates whether paper is fed under each [Form Discharge] selection.

Form Discharge	Paper Feed for Bottom Margin
Enable	Yes
Disable	No

4.3.6 Cutter Control
Select the cutting operation after printing.
- ◆ Full Cut: Paper is fully cut.
- ◆ Partial Cut: Paper is partially cut.
- ◆ Non Cut: Disable the cutting operation.
- ※ When select [Full Cut] or [Partial Cut], the paper is fed from the cutter to the head.
- ※ When using marked paper, paper is fed from the cutter to the head before the mark detection processing.
- ※ For preventing paper jam and/or squashed print, paper is fed from the cut position forward or backward direction after cutting. The table below indicates the amount of paper feeding for each of the [Cutter Control] settings.

Cutter Control	Feed size after cutting
Full Cut	(-) 6 mm
Partial Cut	7 mm

(-) indicates backward paper feeding.

4.3.7 Print Mode
Select the print processing mode.
- ◆ Page Mode Priority: The page mode is used for printing when the printing contents are printable in the page mode. If not, the standard mode is used for printing.
- ◆ Standard Mode: Printing is operated in the standard mode.
- ※ For the CPU-type models, all printing is operated in the standard mode.
  The item of the [Print Mode] setting is not displayed.
- ※ When [Page Mode Priority] is selected, the page mode is used when the image size on a page including the top margin (exclusive of the bottom margin) is allowable in the page mode.

4.3.8 Function Settings
Launch the utilities and set up the printer.
Function settings can be displayed or changed.
For the function setting utility, refer to the function setting described in"5.4 Device Setting Tab".

5. Setting Properties

5.1 Overview
Printer driver settings can be set on the [Properties] window.

5.2 Properties Window
To display the [Properties] window, follow the steps below.
1. Right-click the printer icon in the printer folder to display the sub-menu.
2. Click [Printer Properties] from the displayed sub-menu.
※ It is not a defect of the driver that the collapse of printing contents occur when printing by selecting [Print Test Page] on the [General] tab of the [Properties] window as the function is not applicable for paper width for compact printers.

5.3 Ports Tab
Set the port to print. Configure the port settings to be matched with the communication settings of the printer.
※ Be sure to select the [Enable bidirectional support] check box.
If the driver doesn't work by using the virtual port, etc., uncheck the checkbox of [Enable bidirectional support]. In this case, the function using bidirectional-communication cannot be available.

[Properties] – Bottom of the [Ports] tab
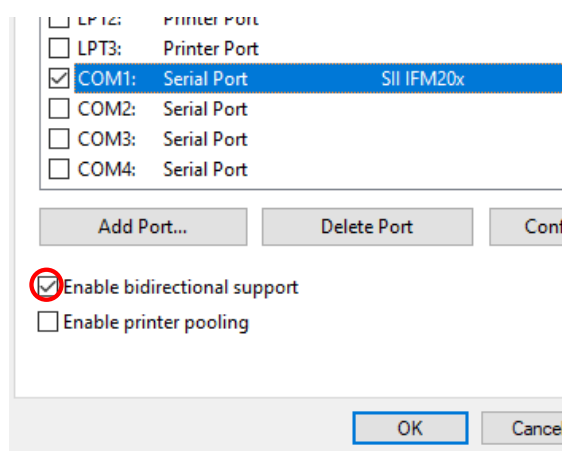
Settings for Serial Communication

❑ Select [COMx: Serial Port] and click [Configure Port..] and then configure the communication settings with the printer to be matched, on the COM properties dialog.
❑ The following are the notes for communication settings.
    ※ To configure the settings, log on the computer with administrator privileges.
    ※ Specify the value of the [Bits per second] (communication speed) to be 115200 bps.
    ※ When using bidirectional communication library, select [Flow Control] to hardware.
    ※ Select [Data bits] to "8".
    ※ For Windows Server 2019, 2016 and 2012, the communication settings cannot be set by the [Configure Port] button. Set the communication settings from [Ports (COM & LPT)] in the [Device Manager] on the computer.

5.4 Device Setting Tab
Launch the utilities and set up the printer.

Function Settings

❑ State of the function settings can be displayed and changed.
    For more details, refer to the product technical reference.
❑ The current settings displayed can be saved to a file. The saved data can be reloaded using the utilities.
❑ The utility operations for the function settings require administrator privileges.
    When users without administrator privileges operate the utility for the function settings, log on the computer with administrator privileges and follow the procedure as follows.
      1. Open the [Security] tab on the [Properties] window.
      2. Select [Everyone] for [Group or user names].
      3. For [Permissions for Everyone], select the [Allow] checkbox in [Manage This Printer].
❑ The following describes an example of the way to change the function settings
      1. Click [Function Setup] => [Setup…] to display the current function settings.
      2. Double-clicking the displayed item enters the edit mode.
      3. After completing the setting change, click [Apply] to write the settings to the printer.
      4. To save the current settings on the list to a file, click 🖫.
      5. To restore the saved data from the file in which the settings were saved, click 📂.
      6. To exit from the edit mode, click the ❌ button or [Close].
    ※ Operations for the function settings are available only when the printer is ready for printing.

5.5 Version Tab
Display version information of the driver.

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6. Page Setup

6.1 Overview

The following describes the available paper sizes with the printer driver.

The usable paper sizes: the default sizes as installed and user addable sizes.

For method to register a new paper size, refer to"6.5 How to Add a New Paper Size".

Note that the paper width for the driver should be specified as the printable width of the thermal head, not the width of the actual paper.

For more details, refer to"6.3 Paper Sizes".

The following description assumes that the paper discharge direction is portrait.

6.2 Terms

The terms used in explanation of paper re as listed below:

Terms	Description
Output paper (size)	The paper (size) which is actually used for printing.
Driver paper (size)	The paper (size) that is used on the computer (printer driver). Width of the driver paper refers to the printable width (head length) and length refers to the output paper length.
Margins	The areas where printing is impossible on the output paper.
Standard paper (size)	The driver paper sizes which are automatically registered on installation of the driver.
User defined paper	The driver paper sizes that users can newly add separately.

6.3 Paper Sizes

The following indicates about the relationship between the output paper size and the driver paper size.
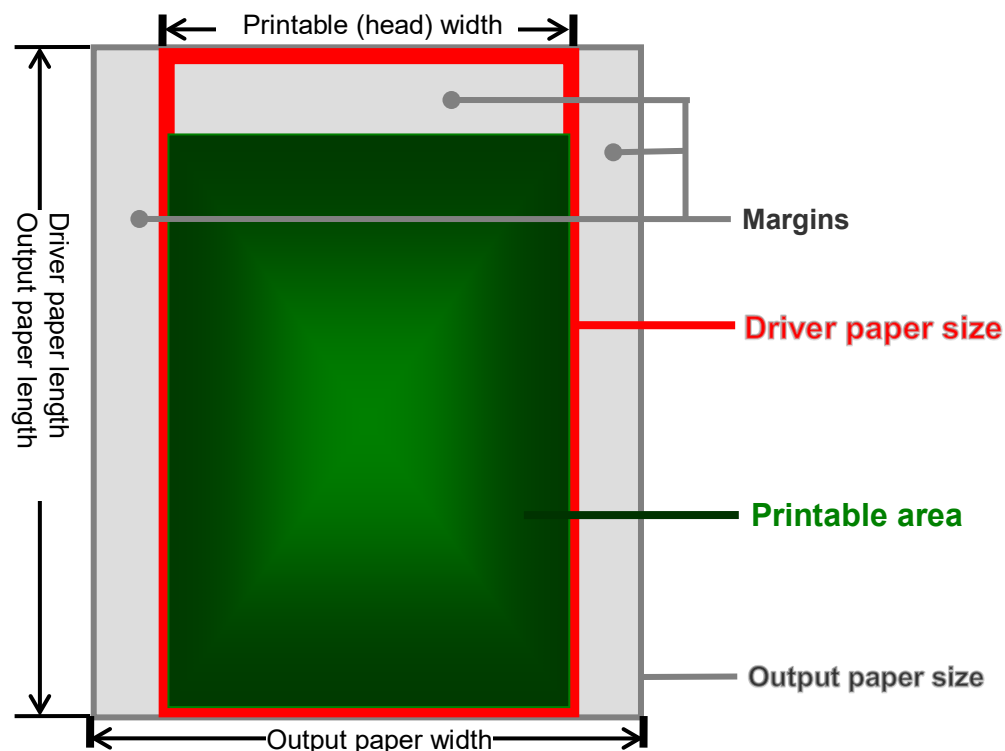
Available paper sizes to each output paper width are listed as follows:

Output Paper Width	Standard Paper Size	User Defined Paper Size (Range)	
58 mm	54 × 297 mm	Width	25.6 mm to 54 mm
		Length	30 mm to 3276 mm
60 mm	54 × 297 mm 56 × 297 mm	Width	25.6 mm to 56 mm
		Length	30 mm to 3276 mm
80 mm	54 × 297 mm 56 × 297 mm 72 × 297 mm	Width	25.6 mm to 72 mm
		Length	30 mm to 3276 mm
82.55 mm	54 × 297 mm 56 × 297 mm 72 × 297 mm 80 × 297 mm A4 Letter	Width	25.6 mm to 80 mm
		Length	30 mm to 3276 mm

※ There are the driver papers which are a larger width than the printable sizes. Such as [A4] or [Letter].
    If selecting these paper sizes, a large margin appears to the right of the paper on the computer.
※ Due to the printer mechanism, the actual outputted paper length may be slightly different from the specified paper size.

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※   When using marked paper, the paper length must be the following condition:
      * Paper length < [Distance between marks] - 10mm

6.4 Margins

Paper width direction

The following describes the margins in the paper width.
This margin sizes in this direction depend on the paper width size.

Output Paper Width	Total of Right and Left Margins	Driver Paper Width
58 mm	4 mm	54 mm
60 mm	4 mm	56 mm
80 mm	8 mm	72 mm
83 mm	3 mm	80 mm

※   The output paper and the driver paper are common paper length.
※   The margins explained here indicate the area where the printer cannot print on the output paper and are different from the area derived from the driver paper size.
※   This description does not apply to A4 or Letter size.

Paper length direction

The following describes the margins in the paper length direction.
The margin sizes in this direction depend on the selection of [Cutter Control].

Cutter Control Selection	Top Margin	Bottom Margin
Full Cut	8.2 mm	0.5 mm
Partial Cut	21.2 mm	0.5 mm
Non Cut	2.5 mm	0 mm

※   This description does not apply about using marked paper.

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6.5 How to Add a New Paper Size

The following explains the procedure for adding a user defined paper size.
1. Display the [Forms] tab on the [Print Server Properties].
2. Select the [Create a new form] checkbox.
3. Overwrite the paper size name in the [Form name] field.
4. Select the [Metric] radio button.
5. Type the width for the user defined paper size in the [Width] field in [Form description (measurements)].
6. Type the length for the user defined paper size in the [Height] field in [Form description (measurements)].
7. Finally, click [Save Form] to complete the registration.
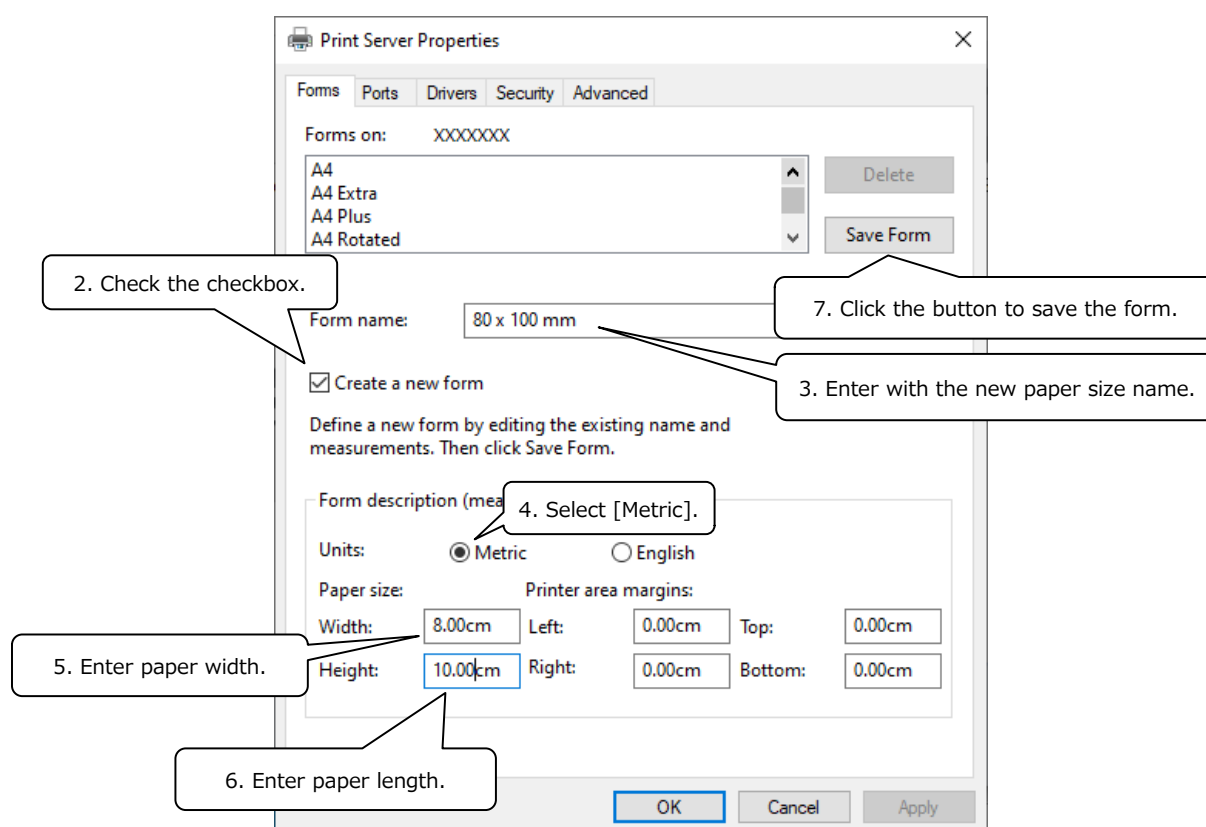
※ Add a new size in consideration of [User Defined Paper Size (Range)] in "6.3 Paper Sizes".
※ The printable area length in the paper discharge direction is different from the paper length.
※ If the paper size is set with margins of "0" the fixed margin size is used.
※ To add a user defined paper size, log on to the computer with administrator privileges.
※ Regarding the paper sizes listed in the [Forms] tab, those within the size range specified in [User Defined Paper Size (Range)] in "6.3 Paper Sizes" will be available for the printer driver.
※ To display the [Server Properties] window, follow the steps below.
  1. Click the intended printer icon in the printer folder.
  2. Click [Print server properties] displayed to toolbar in the printer folder upper part.

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7. Communication Library

The (#) mark is added to the following description if any specification is changed from the previous released version (less than Ver.2.20).

For using Communication Library, some setting conditions of the function setting must be set as specified value. Refer to the"2.2 Function Settings" for details.

7.1 Overview

The printer driver has a communication library for developers to control the printer directly. Communication library is installed together with the printer driver and works via the printer driver.
Communication library allows to control the printer directly on the application software development not depending on port type.
For the specific usage of communication library, refer to the attached sample program (Microsoft Visual C++ version 2005).

7.2 Functions

Communication library provides the following functions for application software to be developed.
- ❑ Transmitting arbitrary binary data to the printer
- ❑ Retrieving incoming data from the printer
- ❑ Retrieving status data of the printer
- ❑ Reset the printer

7.3　Library File
Communication library file name is as follows:

SII_IFM_API.DLL

The Communication library file is stored in the Windows system folder.
Use the Communication library without moving it from the folder. In this case, you do not have to set a path to the folder containing the Communication library.
If the Communication library file is moved to another location, the Communication library could not be updated properly during version up of the printer driver.

7.4 Functions

List of Communication Library Functions

The following explains the functions of the communication library file.

Function Name	Brief Description of the Function
OpenSiiPrinterA OpenSiiPrinterW	Create a printer object and retrieve the session ID
CloseSiiPrinter	Close a printer object and disable the session ID
SetSiiPrinterData	Send arbitrary binary data to the printer
SetSiiPrinterTimeout	Set timeout for **SetSiiPrinterData**
GetSiiPrinterASB	Retrieve latest ASB
SetSiiPrinterCallbackASB	Register the callback function which will be called when ASB changed
GetSiiPrinterCounter	Retrieve the maintenance counter information
GetSiiPrinterError	Retrieve error history
GetSiiPrinterStatus	Retrieve the printer status information
GetSiiPrinterId	Retrieve the printer ID
GetSiiPrinterFontId	Retrieve the font ID
GetSiiPrinterDataA GetSiiPrinterDataW	Retrieve the specified response data from the printer
SetSiiPrinterReset	Reset the printer

Name of Functions with Arguments Include Letter Strings

A suffix of "W" or "A" for some function names means that the function name needed to be called varies depending on whether to use MBCS (MultiByte Character Set) or Unicode as an argument to be set with letter strings.
For example, to call the **OpenSiiPrinter** function, use **OpenSiiPrinterA** for MBCS, and **OpenSiiPrinterW** for Unicode.
Note that a suffix of "W" or "A" is omitted in the following explanations.

7.5 Details of Communication Library Functions

The following is detailed specification of each function.

Common Specifications of All Functions

Return value

Returns an error code (≠0) for any failure of the function, and Zero (=0) in case of success.

Description

- ❑ For error codes, refer to "7.8 Return Values (Error Codes)".
- ❑ Communication library are not applicable for the network connection via the shared printer feature.
- ❑ Printer information retrieved by windows features, such as the Status member of PRINTER_INFO_X structure defined by the Windows Platform SDK, is not supported.
- ❑ When using serial communication settings, set the flow control to [Hardware].
  For setting instructions, refer to "5.3 Ports Tab".
- ❑ Outputting data including a command to disable ASB by any method may interfere with proper retrieval of the subsequent ASB.
- ❑ All communication library functions are only available when the bidirectional support function is enabled. For setting instructions, refer to "5.3 Ports Tab".
- ❑ If the device becomes impossible to analyze the command correctly by interrupting the data output, then the hardware reset of the printer (or **SetSiiPrinterReset** function call) is needed to recover for using driver's functions.
- ❑ When the printer is offline, the function which gets the response data length of printer command can return only the fixed response-size.

OpenSiiPrinter

Creates a printer object and retrieves the session ID.
DWORD OpenSiiPrinter(
  LPCTSTR *pszName*,
  LPDWORD *pdwSessionId*)

Parameters

pszName
        Pointer to a null terminated letter string that specifies the name of the printer.
pdwSessionId
        Pointer to a variable that receives the session ID of the printer object.

Description

- ❑ The printer friendly name that should be input into pszName is the printer name displayed in the printer folder.
- ❑ When the session ID acquired by this function becomes unnecessary, be sure to disable the ID by the **CloseSiiPrinter** function.
- ❑ This function will succeed regardless of the state of the connection between the printer and the computer.
- ❑ If an unsupported port is assigned to the printer driver, this function will return an error code.
- ❑ Up to eight objects can be simultaneously opened.
- ❑ If the printer is in the state that cannot be printed, it may take longer to respond to this function.

CloseSiiPrinter

Abandons a printer object and disables the session ID.
DWORD CloseSiiPrinter(
  DWORD *dwSessionId*)

Parameters

dwSessionId
        The session ID retrieved with the **OpenSiiPrinter** function.

Description

- ❑ Specifies the session ID to be disabled.
- ❑ Stops ASB monitoring by the **SetSiiPrinterCallbackASB** function.
- ❑ The response of this function will be returned after all processes of the other functions are completed.

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SetSiiPrinterData

Writes data to the printer.

DWORD SetSiiPrinterData(
  DWORD *dwSessionId*,
  LPBYTE *pCmd*,
  DWORD *cbCmd*,
  LPDWORD *pcWritten*)

Parameters

dwSessionId
  The session ID acquired by the **OpenSiiPrinter** function.
pCmd
  Pointer to an array of bytes that contains the data that should be written to the printer.
cbCmd
  The size, in bytes, of the buffer pointed to by *pCmd* .
pcWritten
  Pointer to a value that receives the number of bytes of data that were written to the printer.
  If it is not necessary, null can be specified.

Description

- ❑ Arbitrary binary data can be transmitted to the printer.
- ❑ The control of the function is not returned until data transmission ends or it exceeds the timeout period.
- ❑ If print job for this printer driver exist, this function will fail and return an error code.
- ❑ If a print job occurs when outputting the data for a document by plural calling, the print job may interrupt the output data.
- ❑ Data transmission processed by this function is not included in the jobs of the printer driver.
The timeout setting can be specified by the **SetSiiPrinterTimeout** function.
For details about the timeout setting, refer to "SetSiiPrinterTimeout

- ❑ SetSiiPrinterTimeout".
- ❑ If the binary data to be output includes a command to disable ASB, the subsequent ASB may not be acquired properly.
- ❑ If this function is divided and sent separately when multiple processes use the communication library, unexpected output from other processes may interrupt before completion of transmission.
  When outputting such commands and data that do not allow interrupting of other data, especially for image data, be sure to output all data in one call.
- ❑ When the actual output data size is less than the size of cbCmd, the operation will be as follows:
  - If NULL is specified for *pcWritten*, this function will fail and an error code will be returned.
  - If any value except Null is specified for *pcWritten*, this function will succeed by storing the number of sent data into the variable indicated by *pcWritten*.
- ❑ This function can be cancelled by **SetSiiPrinterReset**. **(#)**

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SetSiiPrinterTimeout

Specifies valid timeout setting by the SetSiiPrinterData function.
DWORD SetSiiPrinterTimeout(
  DWORD *dwSessionId*,
  DWORD *dwTimeout*)

Parameters

dwSessionId
    The session ID acquired by the **OpenSiiPrinter** function.
dwTimeout
    Variable to receive the specified timeout for output in millisecond.

Description

❑ <u>Only</u> effects on the timeout setting for the **SetSiiPrinterData** function.
❑ The configurable value of timeout is 3 to 90 seconds. When setting a value out of the range, this function will fail.
❑ The actual time-out period may be longer than the set value.
❑ The value set by dwTimeout sets again or is effective until **CloseSiiPrinter** is called.
❑ If timeout setting is not assigned by this function, the system (LPT port) timeout setting is applied.
    The system (LPT port) timeout setting can be set by either of the following.

Edit in the Property Tab
    1. Select any of [Printer Port (LPT x)] in the Ports tab on the [Properties] window.
    2. Click the [Configure Port] button to display the value of timeout.
       Enter an arbitrary value of timeout in second.
  ※ For details of the [Properties] window, refer to "5. Setting Properties".
  ※ When changing the value of timeout, pay attention not to change the output port of the printer driver.

Direct Edit of Registry
    1. When using the registry editor (regedit.exe) to set the value of timeout, enter an arbitrary value of timeout in second for "TransmissionRetryTimeout" in the following folder:
       HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\WindowsNT\CurrentVersion\Windows
  ※ Pay attention to the operation as a mistake made in registry setting may prevent the PC from starting.
❑ The system (LPT port) timeout cannot be set for less than 3 seconds.
❑ To validate the system (LPT port) timeout setting must reload of the communication library. **(#)**

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GetSiiPrinterASB

Retrieves the latest ASB.

DWORD GetSiiPrinterASB(
  DWORD *dwSessionId*,
  LPDWORD *pdwStatus*)

Parameters

dwSessionId
    The session ID acquired by the **OpenSiiPrinter** function.
pdwStatus
    Pointer to a variable that receives ASB.

Description

❑ Retrieves the latest ASB.
❑ When disconnection from the printer is detected, the ASB value is returned as 0.
❑ The response data is retrieved in the ASB format. For details, refer to "7.6 Response Data Format".
    For details about ASB response, refer to the product technical reference.
❑ For notes on retrieving ASB, refer to "7.7 Notes on ASB Response".
❑ When a callback function is registered by the **SetSiiPrinterCallbackASB** function, calling this function disables current registration of the callback function.

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SetSiiPrinterCallbackASB

Registers the callback function to be called when ASB changes.

DWORD SetSiiPrinterCallbackASB(
  DWORD *dwSessionId*,
  INT (*CALLBACK EXPORT ∗lpfnCallBackStatus*)(*DWORD dwStatus*))

Parameters

dwSessionId
    The session ID acquired by the **OpenSiiPrinter** function.
lpfnCallBackStatus
    Function pointer of the callback function.
dwStatus
    A variable to receive ASB with the callback function.

Description

- ❑ Registers the callback function to be called when ASB change is detected.
- ❑ For notes on retrieving ASB, refer to "7.7 Notes on ASB Response".
- ❑ For details about ASB response, refer to the product technical reference.
- ❑ When a callback function is registered by this function, the callback function with current ASB is called only once immediately after registration.
- ❑ The response data by the use of the callback function is retrieved in ASB format.
  For details, refer to "7.6 Response Data Format".
- ❑ If ASB has not changed from the immediately preceding ASB, the callback function is not called even when ASB is received from the printer.
- ❑ The callback function is called when the connection state with the printer is changed.
- ❑ When reconnection with the printer is detected, the latest received value of ASB will be returned.
- ❑ Synchronism between timings of ASB reception and calling the callback function is not guaranteed.
- ❑ When a callback function is already registered and this function is called again, the registered function becomes invalid and a new callback function will be registered.
- ❑ If specifying null to *lpfnCallBackStatus*, the registered function becomes invalid.
- ❑ It is possible to disable the registered callback function by calling the **CloseSiiPrinter** function or the **GetSiiPrinterASB** function so that to stop the ASB monitoring.
- ❑ The return value of the callback function is ignored.
- ❑ Even when calling this function by specifying the valid callback function again, the callback function with current ASB will be called once again. **(#)**
- ❑ The function of the communication library cannot be called from the registered inside of the callback function. **(#)**

GetSiiPrinterCounter

Retrieves the maintenance counter response.
DWORD GetSiiPrinterCounter(
    DWORD *dwSessionId*,
    WORD *wIndex*,
    LPBYTE *pData*,
    DWORD *cbData*,
    LPDWORD *pcbNeeded*)

Parameters

dwSessionId
    The session ID acquired by the **OpenSiiPrinter** function.
wIndex
    Index of maintenance counter to be retrieved.
pData
    Pointer to a variable that receives response data.
cbData
    The size, in bytes, of the buffer pointed to by pData.
pcbNeeded
    Pointer to a variable that receives a necessary buffer size or the number of actually received bytes.

Description

- ❑ Retrieves response of the [Maintenance Counter Transmission] command described in the product technical reference.
- ❑ The response data is retrieved in HEX code format. For details, refer to "7.6 Response Data Format".
- ❑ For details about the [Maintenance Counter Transmission] command and its response, refer to the product technical reference.
- ❑ For *wIndex*, specifies the "maintenance number (n)" of the [Maintenance Counter Transmission] command in 2 bytes. (e.g., For n = 14H, *wIndex* = 0014H)
- ❑ If invalid value is set to *wIndex*, this function will fail.
- ❑ To retrieve the response data size, calling this function with *cbData* set to 0 returns an error code of ERROR_INSUFFICIENT_BUFFER, and puts the size into the variable indicated by *pcbNeeded*.

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GetSiiPrinterError

Retrieves error history response.

DWORD GetSiiPrinterError(
  DWORD *dwSessionId*,
  BYTE *byIndex*,
  LPBYTE *pData*,
  DWORD *cbData*,
  LPDWORD *pcbNeeded*)

Parameters

dwSessionId
> The session ID acquired by the **OpenSiiPrinter** function.

byIndex
> Index of error response type to be retrieved.

pData
> Pointer to a variable that receives response data.

cbData
> The size, in bytes, of the buffer pointed to by pData.

pcbNeeded
> Pointer to a variable that receives a necessary buffer size or the number of actually received bytes.

Description

- ❑ Retrieves response of the [Error History Response] command described in the product technical reference.
- ❑ For *byIndex*, specifies the value of parameter (n) of the [Error History Response] command.
- ❑ The response data is retrieved in HEX code format. For details, refer to "7.6 Response Data Format".
- ❑ For details about the [Error History Response] command and its response, refer to the product technical reference.
- ❑ If invalid value is set to *byIndex*, this function will fail.
- ❑ To retrieve the response data size, calling this function with *cbData* set to 0 returns an error code of ERROR_INSUFFICIENT_BUFFER, and puts the size into the variable indicated by *pcbNeeded*.

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GetSiiPrinterStatus

Retrieves status response of the printer.
DWORD GetSiiPrinterStatus(
  DWORD *dwSessionId*,
  BYTE *byIndex*,
  LPBYTE *pData*)

Parameters

dwSessionId
    The session ID acquired by the **OpenSiiPrinter** function.
byIndex
    Index of status data type to be retrieved.
pData
    Pointer to a variable that receives response data.

Description

- ❑ Retrieves response of the [Status Data Send] command described in the product technical reference.
- ❑ The response data is retrieved in the status response format.
  For details, refer to "7.6 Response Data Format".
- ❑ For details about the [Status Data Send] command and its response, refer to the product technical reference.
- ❑ For *byIndex*, specifies the parameter (n) of the [Status Data Send] command.
- ❑ If invalid value is set to *byIndex*, this function will fail.

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GetSiiPrinterId

Retrieves the printer ID response.

DWORD GetSiiPrinterId(
  DWORD *dwSessionId*,
  BYTE *byIndex*,
  LPBYTE *pData*,
  DWORD *cbData*,
  LPDWORD *pcbNeeded*)

Parameters

dwSessionId
       The session ID acquired by the **OpenSiiPrinter** function.
byIndex
       Index of printer ID type to be retrieved.
pData
       Pointer to a variable that receives response data.
cbData
       The size, in bytes, of the buffer pointed to by pData.
pcbNeeded
       Pointer to a variable that receives a necessary buffer size or the number of actually received bytes.

Description

❑ Retrieves response of the [Printer ID Send] command described in the product technical reference.
❑ The response data is retrieved as the ASCII string or in HEX code format.
   For details, refer to "7.6 Response Data Format".
❑ For details about the [Printer ID Send] command and its response, refer to the product technical reference.
❑ For *byIndex*, specifies the parameter (n) of the [Printer ID Send] command.
❑ If invalid value is set to *byIndex*, this function will fail.
❑ To retrieve the response data size, calling this function with *cbData* set to 0 returns an error code of ERROR_INSUFFICIENT_BUFFER, and puts the size into the variable indicated by *pcbNeeded*.

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GetSiiPrinterFontId

Retrieves the printer font ID response.

DWORD GetSiiPrinterFontId(
  DWORD *dwSessionId*,
  BYTE *byType*,
  BYTE *byParam*,
  BYTE *byFunc*,
  LPBYTE *pData*,
  DWORD *cbData*,
  LPDWORD *pcbNeeded*)

Parameters

dwSessionId
    The session ID acquired by the **OpenSiiPrinter** function.
byType
    Value that indicates the font type of the printer font ID to be retrieved.
byParam
    Value that indicates the printer font ID type to be retrieved.
byFunc
    Value that indicates the printer font ID function to be retrieved.
pData
    Pointer to a variable that receives response data.
cbData
    The size, in bytes, of the buffer pointed to by pData.
pcbNeeded
    Pointer to a variable that receives a necessary buffer size or the number of actually received bytes.

Description

❑ Retrieves response of the [1-byte Font ID Send] or [2-byte Font ID Send] command described in the product technical reference.
❑ The response data is retrieved in the ASCII string or in HEX code format.
    For details, refer to "7.6 Response Data Format".
❑ For details about the [1-byte Font ID Send] and [2-byte Font ID Send] commands and their response, refer to the product technical reference.
❑ Select the value that indicates the font ID type to be retrieved and input it to *byType*.

byType Value		Font ID Type	
HEX	DEC	Two-byte/One-byte	Font Size
00H	0	Two-byte	24
01H	1	↑	16
02H	2	One-byte	24
03H	3	↑	16

❑ The value to enter for *byParam* depends on whether the font is one-byte or two-byte characters.
    For One-byte Fonts
    Enter the parameter (b) value that indicates "Page number" in the [1-byte Font ID Send] command.
    For Two-byte Fonts
    Enter the parameter (b) value that indicates "Font" in the [2-byte Font ID Send] command.
❑ For *byFunc*, enter the parameter (c) value that indicates "Function" as explained for the [1-byte Font ID Send] or [2-byte Font ID Send] command in the product technical reference.

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- ❑ To retrieve the response data size, calling this function with *cbData* set to 0 returns an error code of ERROR_INSUFFICIENT_BUFFER, and puts the size into the variable indicated by *pcbNeeded*
- ❑ If invalid value is set to any parameter, this function will fail.

GetSiiPrinterData

Retrieves response data from the printer.
DWORD GetSiiPrinterData(
  DWORD *dwSessionId*,
  LPTSTR *pValueName*,
  LPBYTE *pData*,
  DWORD *cbData*,
  LPDWORD *pcbNeeded*)

Parameters

dwSessionId
    The session ID acquired by the **OpenSiiPrinter** function.
pValueName
    Pointer to string of response command that identifies the data to retrieve.
pData
    Pointer to a variable that receives response data.
cbData
    The size, in bytes, of the buffer pointed to by pData.
pcbNeeded
    Pointer to a variable that receives a necessary buffer size or the number of actually received bytes.

Description

- ❑ An arbitrary printer response can be retrieved by specifying the corresponding command strings listed in "List of Command Strings" for *pValueName*.
- ❑ The response data format varies depending on *pValueName*.
  For each response format, refer to "7.6 Response Data Format".
- ❑ For details about each printer command and the response, refer to the product technical reference.
- ❑ To retrieve the response data size, call this function by setting "0" to *cbData* so that the function returns an error code of ERROR_INSUFFICIENT_BUFFER, and the size shall be stored in the variable indicated by *pcbNeeded*. If there is no data to be returned, "0" will be stored.

❑ The list of command strings that can be specified for pValueName are shown below.

List of Command Strings

Supported Command String (pValueName)	Supported Printer Command (Response)
GET_RAW_DATA_ASB_RESP	[ASB] receiving history
GET_RAW_DATA_EXEC_RESP	[Execution Response] receiving history
GET_RAW_DATA_INIT_RESP	[Initialization Response] receiving history
GET_RAW_DATA_PROG_RESP	[Progress Response] receiving history
AUTO_STATUS_BACK	[ASB]
FUNCTION_SET_RESP	Function Set Response
REMAIN_USER_MEMORY_CAP	Remaining Memory Capacity Response
EXT_RAM_MEMORY_CAP	Extension RAM Response
REMAIN_USER_MEMORY_CAP_DEFRAG	Organized Memory Capacity Response
NV_MEMORY_CAP	NV Graphic Memory Capacity Response
REMAIN_NV_MEMORY_CAP	Remaining NV Graphic Memory Capacity Response
REG_NV_IMAGE_KEYCODE_RESP	Specified NV Graphic Key Code List Response

❑ The reception history keeps the response data specified by *pValueName* kept up 256 bytes each.
❑ The reception history records raw data (unconverted data) received after calling of the **OpenSiiPrinter** function.
❑ The reception history includes the response data replied by the operation of the other process.
The same operation and/or calling of the function may not result in the same response.
❑ If the printer is reconnected, the accumulated data by the printer will be received in a lump.
❑ When "*GET_RAW_DATA_ASB_RESP*" is specified for *pValueName*, the ASB receiving history is retrieved.
Note that if the received values of ASB are the same as the latest, the response will be abandoned.
When all ASB data for one response (8 bytes) are "0", it means that a disconnection is detected.
❑ When "*GET_RAW_DATA_EXEC_RESP*" is specified for *pValueName*, the receiving history of [Execution Response] is retrieved.
For details about [Execution Response], refer to the product technical reference.
❑ When "*GET_RAW_DATA_INIT_RESP*" is specified for *pValueName*, the receiving history of [Initialization Response] is retrieved.
For details about [Initialization Response], refer to the product technical reference.
❑ When "*GET_RAW_DATA_EXEC_RESP*" is specified for *pValueName*, the receiving history of [Progress Response] is retrieved.
For details about [Progress Response], refer to the product technical reference.
❑ Command strings listed in the "List of Command Strings" cannot be used for the **GetPrinterData** function, which is a system standard function (Win32API).
❑ If the function fails (the return value is not "0"), values of all parameters are undefined.
❑ The function may fail depending on the command set to *pValueName*.

SetSiiPrinterReset

Resets the printer.
DWORD SetSiiPrinterReset(
  DWORD *dwSessionId*)

Parameters

dwSessionId
> The session ID acquired by the **OpenSiiPrinter** function.

Description

- ❑ Resets the printer using the communication protocol (without using printer commands). However, hardware reset does not work on the virtual port. **(#)**
- ❑ A constant waiting time may occur when hardware-reset succeed. **(#)**
- ❑ When this function is called during execution of **SetSiiPrinterData**, **SetSiiPrinterData** will be cancelled. **(#)**
  - ※ It is required that the reset function using the communication protocol is enabled by the function settings of the printer.
    For the function settings of the printer, refer to the product technical reference.
  - ※ When using this function, wait 1 or 2 seconds until the printer reset is executed, and then execute other process such as data output or etc.
    Note that if data output is executed without waiting for the period, it will result in data omission. Moreover, when printer reset cannot be executed immediately due to other process execution such as Flash memory rewriting or etc., waiting time will be longer.

7.6 Response Data Format

Overview

A Start/end code and/or identification codes are added to the data received from the printer. Unless otherwise specified, communication library responds in the format that the start/end code and identification codes are removed from the received data.
Followings are descriptions of the received data format in which each function responds.
The "Printer Outputs" shown in the following examples are the raw data from the printer, and the "Function Response" indicates the format of the response data of the communication library.

List of Response Format

Communication Library Function	Identification Codes of Response Data	Response Format
GetSiiPrinterASB SetSiiPrinterCallbackASB	CxH / DxH	ASB response format
GetSiiPrinterStatus	AxH	Status response format
GetSiiPrinterCounter GetSiiPrinterError GetSiiPrinterId	2xH to 7xH	ASCII string response format
GetSiiPrinterFontId GetSiiPrinterData *1	ExH / FxH	HEX code response format
GetSiiPrinterData *2	8xH to DxH	RAW data response format

*1: When the *pValueName* value is different from "GET_RAW_DATA__XXX."
*2: When the *pValueName* value is "GET_RAW_DATA__XXX."

ASB Response Format

The ASB response data (8 bytes) starts with the identification code of CxH. The more significant 4 bits (the identification code of CxH/DxH) are removed,
and the less significant 4 bits fill places from LSB in the order to make a 32-bit (4-byte) response string.
If a disconnection state is detected, all bits are made to 0 (zero) to respond.
For details about the ASB response, refer to "7.7 Notes on ASB Response".
(Example) Printer Outputs: **C1H, D2H, D3H, D4H, D5H, D6H, D7H, D8H**
        => Function Output: **0x87654321**

Status Response Format

The status response data (1 byte) that starts with the identification code of AxH is used as it is with the identification code to respond.

ASCII String Response Format

The letter string response data starts with the start code of 02H. Only the start code is removed for the response format.
(Example) Printer Outputs: **02H, 53H, 49H, 49H, 00H**
        => Function Output: **53H, 49H, 49H, 00H**
The function returns 00H as received data when there is not the specified data by parameter.

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HEX Code Format

The HEX code format response data starts with the start code of 0EH.
The start code, the end code (00H) and the identification code (ExH/FxH) are removed for the response format.
(Example) Printer Outputs: **0EH, E2H, F1H, E4H, F3H, E6H, F5H, 00H**
=> Function Output: **12H, 34H, 56H**
The function returns 30 as error code when there is not the specified data by parameter.
However, the function succeeds at 0 length response. **(#)**

RAW Data Format

The received data is responded in the order of reception including the start, end, and identification codes.

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7.7　Notes on ASB Response

※ ASB can also be retrieved with the **GetSiiPrinterASB** function, **SetSiiPrinterCallbackASB** and **GetSiiPrinterData** function.
For more details, refer to each function's section.

※ A disconnection of the printer is expressed in ASB whose all bits are set as 0 including identifier.

※ If a command that disables the ASB function is output with the **SetSiiPrinterData** function, it may result in failure to retrieve ASB properly.

※ A communication failure or an error with the printer may assume ASB as the disconnection state.

※ When the flow control of the serial connection is set to hardware, the way of operation fixing the DSR terminal to the MARK level is not supported.

※ To detect the connection status of the serial cable, at least TxD, RxD, DTR and DSR terminals should be connected on the computer and the printer. Otherwise, the printer may not work properly.

※ Change of ASB during disconnecting may not be retrieved.

※ The function associated with ASB response fails when ASB is not received despite the online state.

※ The received latest ASB of that time is returned when the reconnection was detected.
Therefore, the received ASB is not necessarily the guaranteed current status after connection.

※ For details of the ASB, refer to the [Automatic Status Back Enable/Disable] command described in the product technical reference.

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7.8 Return Values (Error Codes)

❑ The return values are ERROR_SUCCESS (=0) for success of the function, an error code (≠0) for failure of the function.
The error codes are subject to the Windows system error codes.
❑ For the Windows error codes, refer to Microsoft official documents (such as SDK System Error Codes).
❑ The contents of the error code may be unclear because of using the common codes of the Windows error codes.
To complement this, the following indicates error names (error codes) and possible causes.

Principal Windows System Error Codes and Possible Causes

Error Name (Error Code)	Possible Causes
ERROR_INVALID_HANDLE(6)	The input the session ID is illegal.
ERROR_READ_FAULT(30) ERROR_TIMEOUT(1460)	❑ Selected printer information does not exist. ❑ Response cannot be received due to illegal parameters. ❑ Response cannot be received because the printer is busy or in abnormal condition. ❑ Other data exists in the printer buffer.
ERROR_BUSY(170)	The printer is in busy state (during printing).
ERROR_DEVICE_NOT_CONNECTED(1167)	❑ The cable is disconnected. ❑ The printer is powered off.
ERROR_UNKNOWN_PORT(1796)	An unsupported port name such as FILE is specified.
ERROR_UNKNOWN_PRINTER_DRIVER(1797)	An unsupported printer name is specified.
ERROR_INVALID_PRINTER_STATE(1906)	Bidirectional communication support is set to [Disable].
ERROR_DEVICE_NOT_AVAILABLE(4319)	Communication has failed.
ERROR_WRITE_FAULT(29)	Data cannot be written.
ERROR_PRINTER_HAS_JOBS_QUEUED(3009)	The print waiting job exists in the printer.
ERROR_ACTIVE_CONNECTIONS(2402)	DLL is being used in another thread or another process.
ERROR_CONNECTION_COUNT_LIMIT(1238)	The number of objects exceeded the max.
ERROR_BAD_ENVIRONMENT(10) ERROR_ACCESS_DENIED(5) ERROR_INVALID_ACCESS(12) ERROR_UNEXP_NET_ERR(59) ERROR_DEV_NOT_EXIST(55)	The bidirectional module cannot start or error occurs.

7.9 Sample Program

A sample program using communication library (Microsoft Visual C++ version 2005) is attached.
※ SII does not guarantee neither the operation of the sample program nor provide technical support for the sample program and the Microsoft Visual C++ version 2005.
※ The sample program may change without notice.

8.   Disclaimer

SII has carefully designed this product to ensure that it is problem-free.
However, SII is not liable for any damage or loss caused by or related to the use of this software.

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