SII

SII URL Print Agent for Android[TM] and iOS
Application Programmer's Guide

Rev.01

[Products]

RP-G10 Series

RP-F10 Series

RP-E10 Series

MP-B30 Series

MP-B20 Series

MP-A40 Series

Seiko Instruments Inc.

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Introduction

This manual describes "SII URL Print Agent" provided by Seiko Instruments Inc. (hereinafter referred to as "SII").

Target Products

The printers supported by this manual are listed below.

iOS

Printer	Interface
RP-F10 Series	Bluetooth
	TCP/IP
RP-E10 Series[1]	TCP/IP
MP-B30 Series	Bluetooth
	TCP/IP
MP-B20 Series	Bluetooth
MP-A40 Series	Bluetooth
	TCP/IP

[1]: The firmware of the printer to be supported by SII URL Print Agent is Ver.1.11 or later.

Android

Printer	Interface
RP-G10 Series	USB
RP-F10 Series	USB
	Bluetooth
	TCP/IP
RP-E10 Series [*1]	USB
	TCP/IP
MP-B30 Series	USB
	Bluetooth
	TCP/IP
MP-B20 Series	USB
	Bluetooth
MP-A40 Series	USB
	Bluetooth
	TCP/IP

*1: The firmware of the printer to be supported by SII URL Print Agent is Ver.1.11 or later.

Terms

The terms used in this manual are defined as below.

Term	Description
Technical reference	The following technical reference. ・RP-F10/G10 SERIES THERMAL PRINTER TECHNICAL REFERENCE ・RP-E10 SERIES THERMAL PRINTER TECHNICAL REFERENCE ・MP-B30 SERIES THERMAL PRINTER TECHNICAL REFERENCE ・MP-B20 SERIES THERMAL PRINTER TECHNICAL REFERENCE ・MP-A40 SERIES THERMAL PRINTER TECHNICAL REFERENCE
Printer command	Instruction to control the printer, described in "Technical reference".

Notation in This Manual

The notation in this manual is described below.

Symbols

The symbols used in this manual are described below.

Caution

◆ Notes and limitations are described.

Reference

• Supplemental information and related matters are described.

Chapter 1   Overview

SII URL Print Agent (hereafter this software) is a native application that relays print data to SII printer from the URL scheme cooperative application.

Using this software allows a system development for printing with SII printer from a Web application or FileMaker Go.

Call queries defined by this software in the URL scheme.
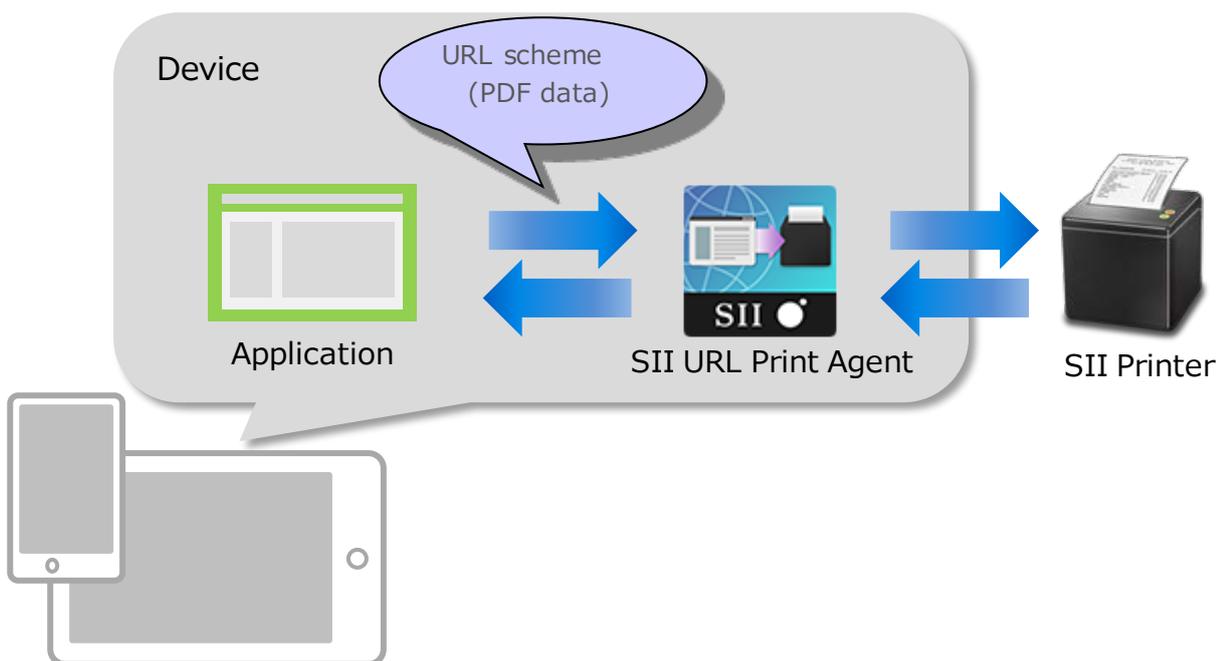
Reference

- For the system development with the URL scheme cooperative application, the development conditions such as the upper limit character numbers of the URL scheme may vary depending on the development environment.
  Please confirm the development conditions carefully in advance with your actual device.

1.1 Download

For iOS:
Search for "SII URL Print Agent" on App Store and download this software.
When update notification is sent from App Store, please confirm the notification and update the software.

For Android:
Search for "SII URL Print Agent" on Google Play and download this software.
When update notification is sent from Google Store, please confirm the notification and update the software.

1.2 Operating environment

The operating environment supported by this software is described below.

1.2.1 Common to iOS and Android

Target product

- SII printer. See "Introduction - Target Products" for details.

Interface

- The interface supported by each SII printer.

1.2.2 iOS

Web browser / application

- Safari
- FileMaker Go

Device

1) iPhone models

- iPhone XR
- iPhone XS
- iPhone XS Max
- iPhone X
- iPhone 8
- iPhone 8 Plus
- iPhone 7
- iPhone 7 Plus
- iPhone SE
- iPhone 6s
- iPhone 6s Plus

2) iPad models

- iPad (6th generation)
- iPad Pro 12.9-inch (2nd generation)
- iPad Pro 10.5-inch
- iPad (5th generation)
- iPad Pro 9.7-inch
- iPad Pro 12.9-inch (1st generation)
- iPad mini 4

3) iPod models

- iPod touch (6th generation)

Version

- iOS 11.0 to 11.4
- iOS 12.0 to 12.4
- iOS 13.0 to 13.3
- iPadOS 13.1 to 13.3

1.2.3 Android

Web browser

- Chrome

Version

- Android 5.0 (API21)
- Android 5.1 (API22)
- Android 6.0 (API23)
- Android 7.0 (API24)
- Android 7.1 (API25)
- Android 8.0 (API26)
- Android 8.1 (API27)
- Android 9.0 (API28)
- Android 10.0 (API29)

1.3 Printer Settings

The memory switches of the printer have been set to the [Value] in the following table in using this software. See "Technical reference" for SII printer described in "Introduction - Target Products" for details of the memory switches.

- RP-F10, RP-G10, RP-E10 series

MS	Function	Value
1-3	Mark Mode Selection[*1] (Mark Mode)	1 : Enable[*2] 0 : Disable[*3]
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
5-6 5-7	Initialization Performance Selection After Paper Setting[*1] (Paper Set Handle)	01 : Initial cut[*4]
13-3	Realtime Command Selection[*5] (Realtime Command)	1 : Enable

*1: Supported only by RP-E10 series.
*2: When [mark] is specified on the setting value of CutFeed in the URL scheme, the value is set "Enable".
*3: When [yes] or [no] is specified on the setting value of CutFeed in the URL scheme, the value is set "Disable".
*4: Only when [mark] is specified on the setting value of CutFeed in the URL scheme, the value is set "Initial cut".
*5: RP-E10 series executes printer command "Realtime Command Enable or disable" with "Enable".

- MP-B30, MP-A40 series

MS	Function	Value
1-2	Mark Mode Selection (Mark Mode)	1 : Disable[*1] 0 : Enable[*2]
1-6	Data Discard Selection When Error Occurs (Error Through)	0 : Enable
1-8	Data Discard Selection When Output Buffer Full Occurs (Response Data Discarding)	1 : Disable
2-1	Initialization Performance Selection After Paper Setting[*1] (Paper Set Handle)	0 : Form Feed[*3]
2-2	Realtime Command Selection (Realtime Command)	0 : Enable
9-2	Initialized Response Selection (Init. Response)	0 : Enable

*1: When [yes] or [no] is specified on the setting value of CutFeed in the URL scheme, the value is set "Disable".
*2: When [mark] is specified on the setting value of CutFeed in the URL scheme, the value is set "Enable".
*3: Only when [mark] is specified at the setting value of CutFeed in the URL scheme sets the value "Form Feed".

- MP-B20 series

MS	Function	Value
3-2	Initialized Response Selection (Init. Response)	0 : Enable
3-3	Realtime Command Selection (Realtime Command)	0 : Enable
3-4	Data Discard Selection When Error Occurs (Error Through)	0 : Enable
3-5	Data Discard Selection When Output Buffer Full Occurs (Response Data Discarding)	1 : Disable

Chapter 2   System Construction

This chapter describes the procedure to construct a system using this software.

2.1 Construction Procedure

1) Preparation
   Prepare SII printer and a device to be installed and set.

2) Install and setting
   Install this software into the device and connect between the device and the SII printer.
   See "1.1 Download" for details of downloading this software.
   See "2.2 Connection Method" for details of the connection method between the device and the SII printer.

3) User application setting
   Set the user application to be able to use it on the device.
   See "Chapter 3 Application Development" for details of the user application development.

4) Operation test
   The test print with the SII printer can be performed by operating the user application.
   The operation test can be conducted by using the sample program. See "Chapter 4 Sample Program" for details of the sample program.

Caution

◆ To operate this software properly, follow the points described below.

   ➢ Make sure the device has sufficient memory.

   ➢ Do not perform a force-quit.

2.2 Connection Method

The connection methods between the device and the SII printer are described below.

    1) Set the Bluetooth connecting setting ON of the device and the SII printer.
       See the user's guide of each printer for the Bluetooth connection setting of the SII printer.

    2) Launch this software.
       See "1.1 Download" for details of downloading the software.

    3) Select the SII printer.
       Tap on the below of "PRINTER SELECT" for iOS and "Printer Select" for Android to select the printer to connect from the list.

Caution

◆ Permit the access to USB within 30 seconds for Android. When the access is not permitted after elapsing 30 seconds, an error occurs.

Reference

- For using Android with USB connection, selecting the printer may be necessary every time the printer power is turned on when the multiple USBs are connected to the device.

- For using MP-B30 or MP-A40 in Simple AP mode, the reconnection of Wi-Fi from the device may be necessary every time the printer power is turned on.

Chapter 3   Application Development

This chapter describes the information necessary to develop a user application used with a system through this software.

3.1 Process Image

The user application calls this software by the URL scheme and sends print data by queries.
This software sends the print command to the SII printer when receiving print data.
The SII printer returns the print result to this software.
When the print result is an error, this software displays an error message according to the received status.
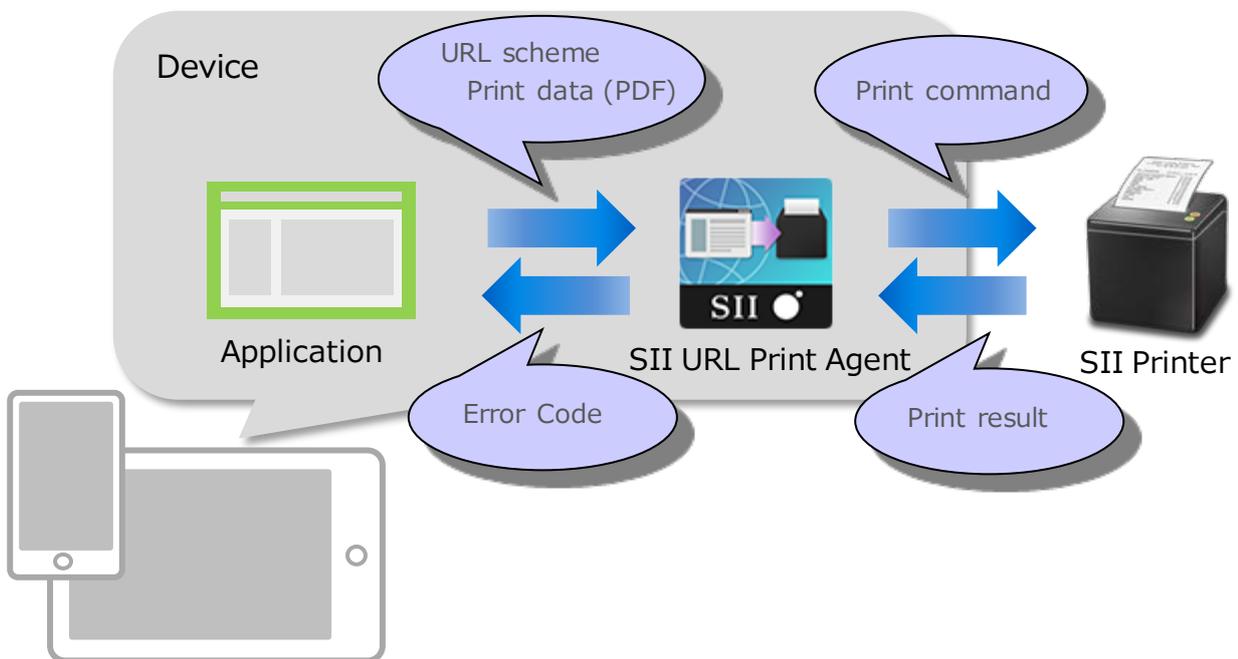
┌─ **Reference** ───┐
- Either in the user application or in this software can be selected to display the error message.
  See "Chapter 5 Error Handling" for details.
└───┘

3.2 URL Scheme

The method to specify the URL scheme is described below.

Syntax

[scheme]://[host]/[action]?[action parameters]

Parameter

scheme

URL scheme name
Call this software.
Specify "siiprintagent".

version

Version
Specify the version of the URL scheme format.
Specify "1.0".

action

Identifier
An identifier of the process to be executed in this software.
Specify "print".

action parameters

Action parameter
Specify action parameters such as the URL scheme on completion, print data or its option parameters, and so on to call.
Specified format: "query1=value1,query=value2,..."

Query	Function	Description		
		Input condition	Setting value	Default
CallbackSuccess	URL to be displayed on the normal end	Optional	URL encoding format (RFC3986)	-
CallbackFail	URL to be displayed on the error occurrence	Optional	URL encoding format (RFC3986)	-
BtKeepConnect	Selection of Bluetooth connection keeping[1]	Required	always/online/no	always
Format	Data format setting	Required	PDF format: pdf	-
Data	Data type setting	Required	Data type: pdf ・Base64 data format ・Data size iOS: Approximately 750 KB (PDF size: 500 KB[2]) Android: Approximately 200 KB (PDF size: 150 KB[2]) ・Paper feed direction at printing maximum length: 500 mm	-

Query	Function	Description			Default
		Input condition	Setting value		
Timeout	The setting of operation timeout (ms) in this software	Optional	10000 to 300000		15000
ErrorDialog	Error notification by this software	Optional	yes/no		yes
SelectOnError	Resetting the printer when a communication error occurs	Optional	yes/no		no
Drawer	Drawer driving setting	Optional	yes/no		no
CutType	Cutter setting	Optional	full/partial/off		partial
CutFeed	Feed selection at the cutting	Optional	yes/no/mark[3]		yes
PaperWidth	Paper width selection[4]	Optional	58/80/100/105/112		Maximum paper width of the printer
FitToWidth[5]	Expanding or reducing the PDF's page in accordance with the specified print area by PaperWidth	Optional	yes/no		no
Rotation	Specifying print direction	Optional	0/90/180/270		0
Dither	PDF dithering selection[1]	Optional	yes/no		no

*1: Supported only by iOS. Android is ignored.
*2: Approximate data size before Base64 conversion.
*3: The [mark] is supported only by RP-E10, MP-B30, MP-A40 series.
*4: Specify the paper width selection according to the print area of each SII printer.
　　See the user's guide of the SII printer for the print area.
*5: When the print data is specified whose maximum length (500 mm) of the paper feed direction at printing is exceeded, the operation is as follows.
　　　　・[yes]　: Notifies an error
　　　　・[no]　 : Not becoming an error and prints the data until the maximum length of the paper feed direction.

Caution

◆ In printing by URL scheme, call the next URL scheme after waiting for the print completion. The printing by the next URL scheme is to be ignored when the next URL scheme is called without waiting for an execution result.

◆ When the next printing is to be executed by the used query with changing setting value since the last time, make sure that a printer error such as out of paper error is not to be caused.

Reference

• Call the URL scheme again when reprinting is necessary.

• Create print data to accommodate the print area of each SII printer.
See the user's guide of each SII printer for the print area.
When print data has not created according to the print area, use **FitToWidth** query.

• Use PDF data converted into Base64 for the print data.

Error handling

The executed result of printing returned by this software is described below.
For displaying error messages in this software, specify "yes" in **ErrorDialog** query of the print command.
For displaying error messages in the user application, specify the application path in **CallbackFail** query of the print command and process the receiving of **Code** query and **Message** query on the user application.

Query	Function	Description		
		Input condition	Setting value	Default
Code	Status code	-	See "3.3 Status Code List" for details.	-
Message	Error message	-	Error message (Internal code[*1])	-

*1: Internal code is required for error analysis in SII.
   See "3.3 Status Code List" for handling method when an error is caused by using **Code** query.

Example

An example of notifying an error in the user's application is described below when an error occurs.
The user's application notifies the status code "-30" and the error message "Timed out. (Internal code)".
Replace %%% with the IP address of the server.

http://%%%/page.html?code=-30&message= Timed out. (Internal code)

3.3 Status Code List

Major status codes are listed below.

Code	Cause	Handling method / state
-10	Failed to communicate with the printer.	・Make sure the printer is turned on and check the communication state. ・For Bluetooth or Wi-Fi communication, make sure Bluetooth or Wi-Fi is the "ON" state. ・For Bluetooth, disconnect the connection to another device if another device and the printer is in the "connect" state.
-20	Failed to get permission.	Get the required permission for this software. If authority is required during communication, grant the authority at that time.
-30	Timed out.	・Make sure the printer is turned on and check the communication status with the printer. ・Adjust the timeout time.
-40	There is no response from the printer.	If the printer has an error, the power off and then on the printer after solving the cause of the error. If not, try reprinting after powering off and then on the printer.
-50	Print has been canceled.	Printing is canceled by the user.
-60	The required format by URL scheme is invalid.	Make sure the required format by URL scheme is correct.
-70	Print data is corrupted.	Specify uncorrupted data. If this error occurs on Android, try reprinting after exiting this software.
-80	Print data to the paper feed direction is too long.	Adjust the length of print data in the direction of paper feed to the appropriate length.
-90	No printer has been selected.	Select the printer and then print.
-200	A system error has occurred.	Exit unnecessary applications and try reprint.
-210	An unknown error has occurred.	An unknown error has occurred.

Chapter 4   Sample Program

This chapter describes the sample application program included in this software.

4.1 Screen Structure

Screen of the sample program is described below.
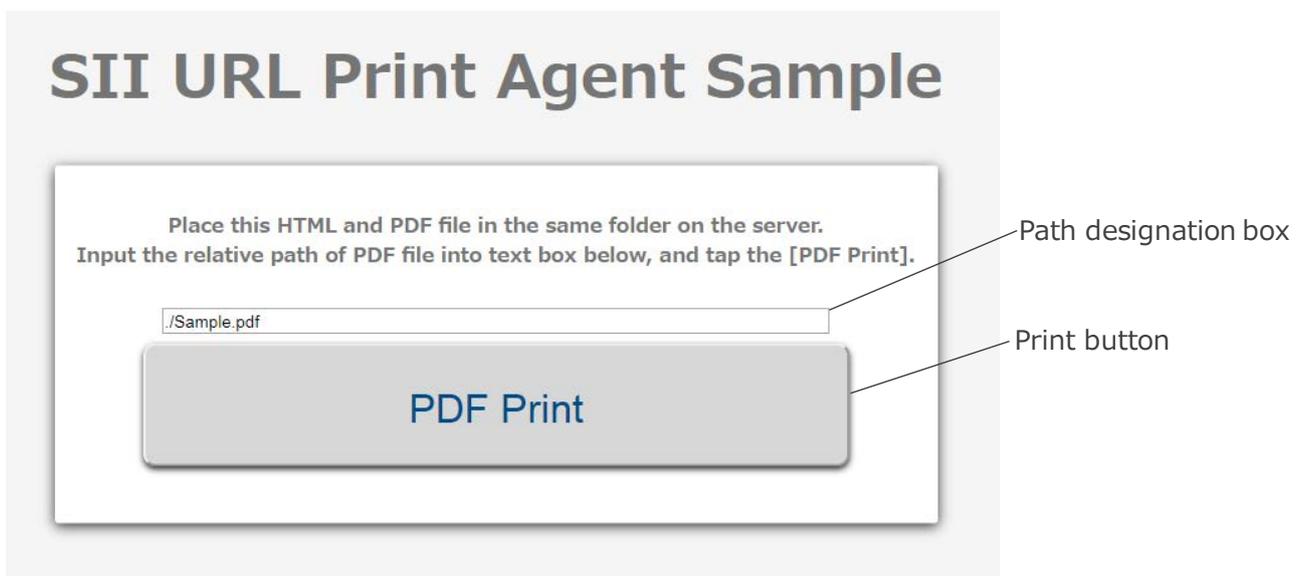
Item	Description
Path designation box	Displays the relative path of PDF file to print.
Print button	Prints PDF file displayed in the path designation box.

4.2 Operating Procedure

The operating procedure of the sample program is described below.

4.2.1 Common to iOS and Android

HTML sample

1) Install this software into the device and connect between the device and the SII printer.
   See "1.1 Download" for details of downloading this software.
   See "2.2 Connection Method" for details of the connection method between the device and the SII printer.

2) Unzip the Sample.zip.

3) Place Sample.html and SamplePDF.pdf in the unzipped folder to the same folder on the server.

> ## Reference
>
> • Place the PDF file to be print in the same folder as Sample.html on the server and tap［PDF Print］after entering the relative path in the path designation box so that the placed PDF can be printed.

4) Launch the web browser on the device and access Sample.html.

5) Tap the [PDF Print] button.

4.2.2 iOS

FileMaker Go sample

1) Install this software into the device and connect between the device and the SII printer.
   See "1.1 Download" for details of downloading this software.
   See "2.2 Connection Method" for details of the connection method between the device and the SII printer.

2) Unzip the Sample.zip.

3) Open Sample.fmp12 in FileMaker Go.

4) Tap the [PDF Print] button.

Chapter 5   Error Handling

This chapter describes error handling.

5.1 Error Handling by Application

5.1.1 Error notification by SII URL Print Agent

```
<!DOCTYPE html>
<html lang="ja">
<head>
<meta charset="utf-8" />

<script>
var pdfData = ";

function getPDFFromWebServer(path) {                                    // Acquire PDF file from the Web server
    return new Promise(resolve => {
        let xhr = new XMLHttpRequest();
        xhr.responseType = 'blob';
        xhr.open("GET", path, true);                                   // Generate a request to the Web server
        xhr.onreadystatechange = function () {                         // The process when the state is changed after sending the request to the Web server
            if (xhr.readyState === 4) {                                // Connecting has been completed
                if (xhr.status === 200) {                              // Contents has been acquired
                    let reader = new FileReader();
                    reader.onload = function() {
                        let index = reader.result.indexOf(',') + 1;    // Read by Base64 format
                        pdfData = reader.result.slice(index);          // Delete unnecessary part
                        resolve();                                     // Synchronization after the completion of the read the process
                    }
                    if (xhr.response) {
                        reader.readAsDataURL(xhr.response);
                    }
                } else if(xhr.status === 0){
                    alert('error while getting pdf');
                }
            }
        }
        xhr.send(null);                                                // Send a request to the Web server
    });
}

async function printData() {                                           // Print
    await getPDFFromWebServer('./Sample.pdf');                         // Reading the PDF file

    let thisPage = window.location.href;
    let url = 'siiprintagent://1.0/print?' +                          // Specify scheme
                'CallbackSuccess='    + encodeURIComponent(thisPage) + '&' +   // URL to be called on print success
                'CallbackFail='       + encodeURIComponent(thisPage) + '&' +   // URL to be called on print failure
                'Format='             + 'pdf' + '&' +                  // Data format ('pdf' fixed)
                'Data='               + encodeURIComponent(pdfData) + '&' +    // PDF data (Base64 encoded)
                'ErrorDialog='        + 'yes' + '&' +                  // Display of printer error dialog on error
                'SelectOnError='      + 'no';                          // Display of printer selection dialog on error
    location.href = url;                                               // Launch SII URL Print Agent
}

</script>
</head>

<body>
    <button class="button" onclick="printData()">PDF Print</button>
</body>
</html>
```

5.1.2 Error notification by User Application

```
<!DOCTYPE html>
<html lang="ja">
<head>
<meta charset="utf-8" />

<script>
var pdfData = '';

function getPDFFromWebServer(path) {                                  // Acquire PDF file from the Web server
    return new Promise(resolve => {
        let xhr = new XMLHttpRequest();
        xhr.responseType = 'blob';
        xhr.open("GET", path, true);                                  // Generate a request to the Web server
        xhr.onreadystatechange = function () {                        // The process when the state is changed after sending the request to the Web server
            if (xhr.readyState === 4) {                               // Connecting has been completed
                if (xhr.status === 200) {                             // Contents has been acquired
                    let reader = new FileReader();
                    reader.onload = function() {
                        let index = reader.result.indexOf(',') + 1;   // Read by Base64 format
                        pdfData = reader.result.slice(index);         // Delete unnecessary part
                        resolve();                                    // Synchronization after the completion of the read the process
                    }
                    if (xhr.response) {
                        reader.readAsDataURL(xhr.response);
                    }
                } else if(xhr.status === 0){
                    alert('error while getting pdf');
                }
            }
        }
        xhr.send(null);                                               // Send a request to the Web server
    });
}

async function printData() {                                          // Print
    await getPDFFromWebServer('./Sample.pdf');                        // Reading the PDF file

    let thisPage = window.location.href;
    let url = 'siiprintagent://1.0/print?' +                         // Specify scheme
                    'CallbackSuccess='    + encodeURIComponent(thisPage) + '&' +    // URL to be called on print success
                    'CallbackFail='       + encodeURIComponent(thisPage) + '&' +    // URL to be called on print failure
                    'Format='             + 'pdf' + '&' +             // Data format ('pdf' fixed)
                    'Data='               + encodeURIComponent(pdfData) + '&' +     // PDF data (Base64 encoded)
                    'ErrorDialog='        + 'no' + '&' +              // Display of printer error dialog on error
                    'SelectOnError='      + 'no';                     // Display of printer selection dialog on error
    location.href = url;                                              // Launch SII URL Print Agent
}

function load() {
    let query = location.search;                                      // Query acquisition
    let code = query.match(/Code=([^&#]*)/);                          // 'Code' acquisition in the query
    let message = query.match(/Message=([^&#]*)/);                    // 'Message' acquisition in the query
    if (code) {                                                       // 'Code' is specified in the query
        alert(`Error.¥n¥nCode = ${decodeURIComponent(code[1])}¥nMessage = ${decodeURIComponent(message[1])}`);
    }
}

window.onload = load;                                                 // Call load function in reading page

</script>
</head>

<body>
    <button class="button" onclick="printData()">PDF Print</button>
</body>
</html>
```

5.2 Error Handling in FileMaker Go

5.2.1 Error notification by SII URL Print Agent

```
# scheme                                           scheme://version/action
Set Variable [ $scheme ; Value: "siiprintagent://10/print?" ]
# CallbackSuccess                                  URL to be called on print success
Set Variable [ $CallbackSucces ; Value: "fmp://$/PrintSample.fmp12" ]
# CallbackFail                                     URL to be called on print failure
Set Variable [ $CallbackFail ; Value: "fmp://$/PrintSample.fmp12" ]
# Format                                           Data format
Set Variable [ $Format ; Value: "pdf" ]
# Data                                             Print data
Set Variable [ $Data ; Value: Base64Encode ( PrintSample:object ) ]
# Error Dialog                                     Display of printer error dialog on error
Set Variable [ $ErrorDialog ; Value: "yes" ]
# SelectOnError                                    Display of printer selection dialog on error
Set Variable [ $SelectOnError ; Value: "no" ]
# Send print data
Open URL [ With dialog: Off ; $Scheme &
"CallbackSuccess="      & GetAsURLEncoded ($CallbackSuccess) &
"CallbackFail="         & GetAsURLEncoded ($CallbackFail) &
"Format="               & $Format &
"Data="                 & GetAsURLEncoded ($Data) &
"ErrorDialog="          & $ErrorDialog &
"SelectOnError="        & $SelectOnError
```

5.2.2 Error notification by User Application

```
# scheme                                                scheme://version/action
Set Variable [ $scheme ; Value: "siiprintagent://10/print?" ]
# CallbackSuccess                                        URL to be called on print success
Set Variable [ $CallbackSucces ; Value: "fmp://$/PrintSample.fmp12" ]
# CallbackFail                                           URL to be called on print failure
Set Variable [ $CallbackFail ; Value: "fmp://$/PrintSample.fmp12?script=Callback" ]
# Format                                                 Data format
Set Variable [ $Format ; Value: "pdf" ]
# Data                                                   Print data
Set Variable [ $Data ; Value: Base64Encode ( PrintSample:object ) ]
# Error Dialog                                           Display of printer error dialog on error
Set Variable [ $ErrorDialog ; Value: "no" ]
# SelectOnError                                          Display of printer selection dialog on error
Set Variable [ $SelectOnError ; Value: "no" ]
# Send print data
Open URL [ With dialog: Off ; $Scheme &
"CallbackSuccess="      & GetAsURLEncoded ($CallbackSuccess) &
"CallbackFail="          & GetAsURLEncoded ($CallbackFail) &
"Format="               & $Format &
"Data="                 & GetAsURLEncoded ($Data) &
"ErrorDialog="           & $ErrorDialog &
"SelectOnError="         & $SelectOnError
```