PalmSecure

U4PS-LC81-01ENZ3

PalmSecure™ SDK V01

Sample Application

for Microsoft .NET Framework

V02 Manual

(Windows (x86) Version / Windows (x64) Version)

FUJITSU

◆ Revision History

Revision	Issued Date	Revised Page	Modification Details
1st Rev.	Jun 2013	Entire document	Newly created

◆ Introduction

Thank you for purchasing PalmSecure™ SDK V01 (hereinafter called "this product").
This document explains how to use Sample application for Microsoft .NET Framework. This document is intended for readers who have a basic knowledge of the following.

- Windows operations
- Microsoft .NET Framework
- Visual Basic.NET or Visual C#

This sample application is provided in order to help customer's application development, and not guaranteed to work properly in customer's actual environment. Please note that it is customer's responsibility to do the quality assurance.

June 2013

June 2013 : First Edition

Regarding to High Safety Required Usage

This Product is designed, developed and manufactured as contemplated for general use, including without limitation, general office use, personal use, household use, and ordinary industrial use, but is not designed, developed and manufactured as contemplated for use accompanying fatal risks or dangers that, unless extremely high safety is secured, could lead directly to death, personal injury, severe physical damage or other loss (hereinafter "High Safety Required Use"), including without limitation, nuclear reaction control in nuclear facility, aircraft flight control, air traffic control, mass transport control, medical life support system, missile launch control in weapon system. You shall not use this Product without securing the sufficient safety required for the High Safety Required Use. If you wish to use this Product for High Safety Required Use, please consult with the sales representatives in charge before such use.

Cautions for Exporting This Product

When exporting or providing this product and this document to a foreign country, check relevant laws such as "Foreign Exchange and Foreign Trade Control Law", and regulations such as U.S. export control law, and follow the necessary procedures.

Warnings

- It is forbidden to copy all or part of this document without permission.
- Items described in this document are subject to change without previous notice.

PalmSecure is a trademark of Fujitsu Ltd.

Microsoft, Windows, Visual Basic, Visual C#, and Visual Studio are registered trademarks of Microsoft Corporation in the United States and other countries.

Other company names and product names described in this document are trademarks or registered trademarks of each company.

◆ Abbreviations and Common Terms

Abbreviations and common terms used in this document are as follows:

Abbreviations/ Common Term	Description
This product	Abbreviation for “PalmSecure™ SDK V01”.
Sample application	Abbreviation for “Sample application for Microsoft .NET Framework V02”.
Interface library	Abbreviation for “Sample interface library for Microsoft .NET Framework V02 ”.
Authentication library	Abbreviation for “Authentication library V31”.
"Authentication library reference guide"	Abbreviation for “Authentication library V31 reference guide”.
PalmSecure Sensor	Abbreviation for “PalmSecure™ Sensor”.
PalmSecure Sensor V2	Abbreviation for “PalmSecure™ Sensor V2”.
Sensor	Common term for “PalmSecure Sensor” and “PalmSecure Sensor V2”.
Windows 7	Abbreviation for “Microsoft® Windows® 7” .
Windows 8	Abbreviation for “Microsoft® Windows® 8” .
Windows	Common term for “Windows 7” and “Windows 8”.
.NET Framework	Abbreviation for “Microsoft® .NET Framework Version 4.0”.
Visual Studio 2010	Abbreviation for “Microsoft® Visual Studio® 2010”.
C++	Abbreviation for “Microsoft® Visual C++®”.
C#	Abbreviation for “Microsoft® Visual C#®”.
VB.NET	Abbreviation for “Microsoft® Visual Basic® .NET”.

◆ Notations

The following symbols are used in this document.

Symbol	Description
!Caution	Describes things that you have to look out for. You must read it.
★Tip	Provides reference information. Read it as necessary.
>See>	Indicates an item to be referred.
Operation	Describes operation procedures.
[ ] button	Indicates a button displayed on the screen.

◆ Table of Contents

Chapter1 Introduction of Sample Application

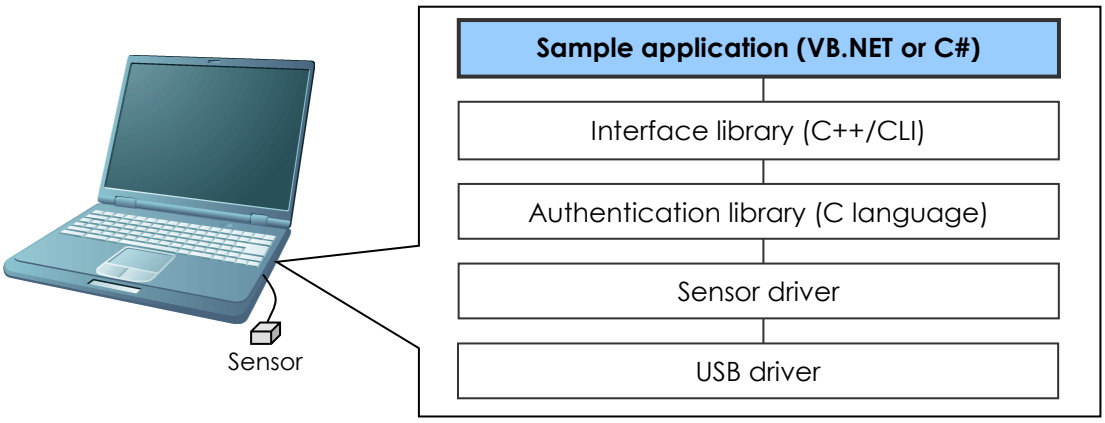
1.1 Overview

This software is Sample application to show how to use Interface library.

Sample application runs on .NET Framework.

And it calls Authentication library via Interface library.

The software structure including Sample application is shown as follows.



>See> As for the Interface library, refer to the ”Sample Interface Library for Microsoft .NET Framework Manual”.

>See> For information on how to build Sample application, refer to the “3.5 How to Build”.

1.2 List of Contents

The following table shows provided files of Sample application (for VB.NET and for C#).

◆ VB.NET

Folder			Stored file/ folder	Description
1st Hierarchy	2nd Hierarchy	3rd Hierarchy		
PalmSecure Sample ForVB	release	Application	PalmSecureSample_VB.exe	Sample application (Common for Windows(x86) version and (x64) version)
		SettingFile	English	A set of setting files (For details, refer to ◆ Set of setting files)
			Japanese	
	source	PalmSecure Sample_VB	-	Set of solution of Sample application for VB.NET

◆ C#

Folder			Stored file/ folder	Description
1st Hierarchy	2nd Hierarchy	3rd Hierarchy		
PalmSecure Sample ForCS	release	Application	PalmSecureSample_CS.exe	Sample application (Common for Windows(x86) version and (x64) version)
		SettingFile	English	A set of setting files (For details, refer to ◆ Set of setting files)
			Japanese	
	source	PalmSecure Sample_CS	-	Set of solution of Sample application for C#

◆ Set of Setting files

Each folder for English and Japanese contains the following files.

Stored file	Description
PalmSecureSample.ini	Application setting file
PalmSecureSample.lang	Language file
PalmSecureSample_GUIDELESS.bmp	Guidance image for hand placing (without guide)
PalmSecureSample_HANDGUIDE.bmp	Guidance image for hand placing (with guide)
PalmSecureSample_NG.wav	Sound file of Verification / Identification NG
PalmSecureSample_OK.wav	Sound file of Verification / Identification OK

Chapter2 Before Using Sample Application

2.1 Hardware and Software Requirements

In order to use Sample application, the following hardware and software are necessary.

Hardware and Software Requirements		Description
Hardware Requirements		Please refer to the “Authentication library reference guide”.
Software Requirements	Tested OS (Note)	• Windows 7 Professional SP1 (x86 / x64) • Windows 8 Pro (x86 / x64)
	Sensor driver	Please refer to the “Authentication library reference guide”.
	Authentication library	• Windows(x86) version Basic Edition V31L10-B02 • Windows(x64) version Basic Edition V31L60-B02
	Interface library	• Windows(x86) version Sample interface library for Microsoft.NET Framework V02 Windows(x86) • Windows(x64) version Sample interface library for Microsoft.NET Framework V02 Windows(x64)
	.NET Framework	Microsoft .NET Framework 4.0

Note) Usage on virtual environment is not tested (such as XP mode in Windows 7).
Please test it by yourself when this product is used on virtual environment.

2.2 Installation of Sample Application

Please install Sample application as follows.

Operation

Step1 Confirm the following settings on target hardware environment.

1. Installation of PalmSecure Sensor driver
2. Installation of Authentication library
3. Setting of "PvAPI.INI" file of Authentication library
4. Confirmation of firmware version of Sensor unit and update the firmware if necessary.
5. Installation of Interface library

★Tip **In order to display message encouraging re-enrollment when created enrollment data is low quality**
Set "enrollment data score notification function" enable in "PvAPI.INI" (3. of Step 1).

>See> For installation of PalmSecure Sensor driver, refer to "Sensor driver installation guide".

>See> For installation of Authentication library, refer to "Authentication library reference guide".

>See> For confirmation of the firmware version, refer to "Sensor maintenance tool operation guide".

>See> For update of the firmware to the latest version, refer to "System development guide".

>See> For installation of Interface library, refer to "Sample Interface Library for Microsoft .NET Framework Manual".

Step2 Copy Sample application to the target hardware.

- **VB.NET:**
  Copy "PalmSecureSample_VB.exe" file, which is located in the following folder.
  "PalmSecureSampleForVB\release\Application"
- **C#:**
  Copy "PalmSecureSample_CS.exe" file, which is located in the following folder.
  "PalmSecureSampleForCS\release\Application"

Step3 Copy each setting file to folder which contains the Sample application.

- **To use Japanese message:**
  Copy all files contained in the following folder.
  - **VB.NET:**
    "PalmSecureSampleForVB\release\SettingFile\Japanese"
  - **C#:**
    "PalmSecureSampleForCS\release\SettingFile\Japanese"

- **To use English message:**
  Copy all files contained in the following folder.
  - **VB.NET:**
    "PalmSecureSampleForVB\release\SettingFile\English"
  - **C#:**
    "PalmSecureSampleForCS\release\SettingFile\English"

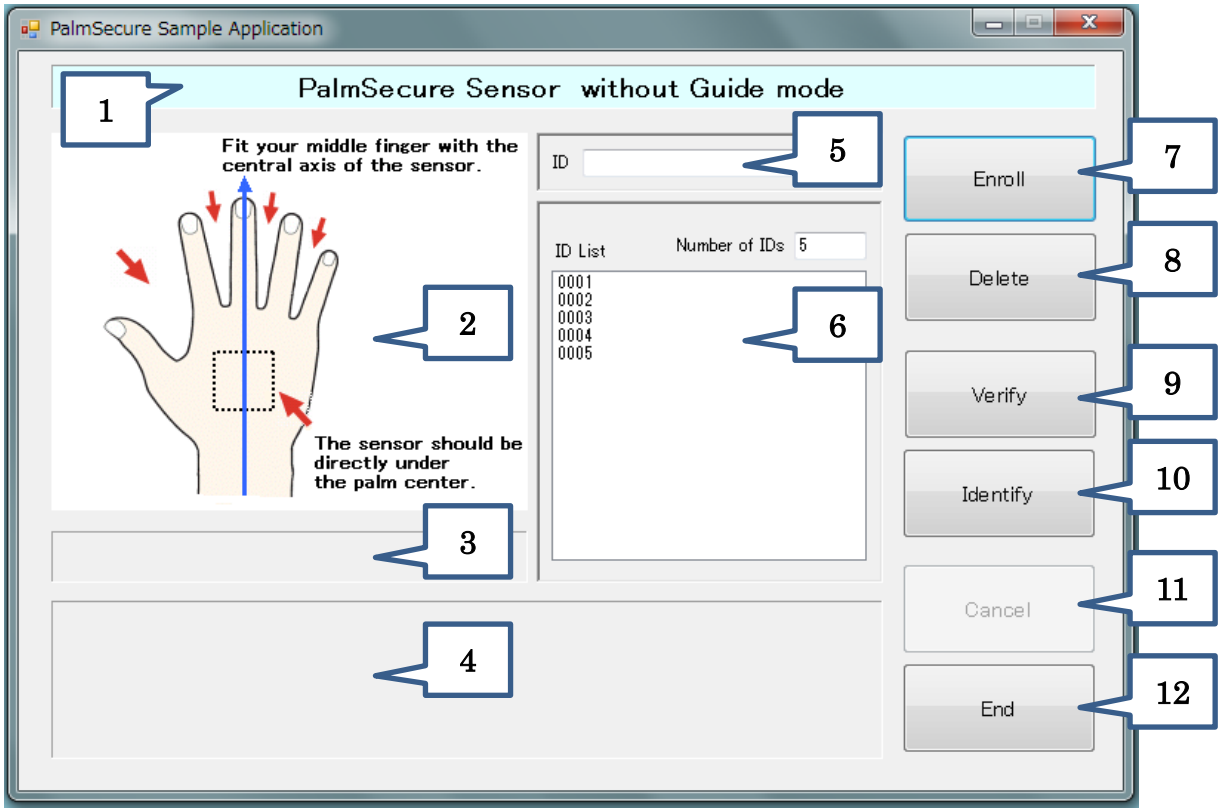
Step4 Connect Sensor to the target hardware.

Step5 Double click "PalmSecureSample_VB.exe" or "PalmSecureSample_CS.exe" and start Sample application.

Chapter3 How to Use Sample Application

3.1 Window Structure

The following shows the window of Sample application.



No.	Name	Description
1	Sensor type / guide mode display area	Area to display Sensor type and Guide mode.
2	Guidance image display area	Area to display guidance image for hand placing.
3	Process name display area	Area to display a name of executing process.
4	Guidance message display area	Area to display guidance message for hand placing and process result. (Note 1)
5	ID input area	Area to input ID of enrollment data.
6	ID list display area	Area to display ID(s) of enrollment data. (Note 2)
7	[Enroll] button	Button to enroll new palm vein data.
8	[Delete] button	Button to delete enrollment data.
9	[Verify] button	Button to execute verification.
10	[Identify] button	Button to execute identification.
11	[Cancel] button	Button to cancel enrollment, verification or identification process.
12	[End] button	Button to terminate Sample application.

Note 1) Guidance message is defined in language file (PalmSecureSample.lang).

Note 2) Only the data ID(s) corresponding to the current condition shown in No.1 will be displayed.

3.2 Application Setting File

By modifying “PalmSecureSample.ini”, it is possible to change operation of Sample application.

No.	Setting Item	Description
1	GuideMode	0 : Without guide 1 : With guide
2	MaxResults	Value to set in “MaxNumberOfResults” of “BioAPI_Identify”.
3	NumberOfRetry	The number of retry when process result is NG in test authentication of enrollment, verification and identification.
4	LogMode	0 : Not output logs 1 : Output logs
5	LogFolderPath	A path name of output folder for the log file and silhouette image file.
6	SilhouetteMode	0 : Not output silhouette image files 1 : Output silhouette image files
7	SleepTime	Waiting time (ms) for switching process between enrollment and test authentication, and that for retry process.

3.3 How to Use Function

3.3.1 Enrollment

The following shows how to enroll palm vein data.

Operation

Step1 **Enter ID of enrollment data to "ID input area".**

Step2 **Click "[Enroll] button".**
"Guidance message display area" displays message for guiding palm to correct position. Following the message, place a hand.
(Note) Error occurs in case there is the same ID in "ID list display area".

Step3 **Enrollment result is displayed on "Guidance message display area".**
When enrollment data is created successfully, a message to indicate it is displayed on "Guidance message display area". Enrollment data is output as the following file name to "Data" folder which contains Sample application.

- **Format of file name:**
  [Sensor type] [Guide mode] _ [Input ID].dat
  - [Sensor type]
    1: PalmSecure sensor or PalmSecure sensor V2
  - [Guide mode]
    0: Without guide
    1: With guide

3.3.2 Verification

The following shows how to execute verification.

Operation

Step1 **Input ID of enrollment data to "ID input area", or select the ID in "ID list display area".**

Step2 **Click "[Verify] button".**
"Guidance message display area" displays message for guiding palm to correct position. Following the message, place a hand.

Step3 **Verification result is displayed on "Guidance message display area".**

3.3.3 Identification

The following shows how to execute identification.

Operation

Step1 **Click "[Identify] button".**
"Guidance message display area" displays message for guiding palm to correct position. Following the message, place a hand.

Step2 **Identification result is displayed on "Guidance message display area".**

!Caution **In case there are multiple enrollment data similar to captured data**
- If difference of authentication result score is more than 3000, it displays data of the highest score as identification result.
- If difference of the score is less than 3000, it displays message to inform there is no corresponding enrollment data.

3.3.4 Deletion

The following shows how to delete enrollment data.

Operation

Step1 **Enter ID of enrollment data to "ID input area", or select the ID in "ID list display area".**

Step2 **Click "[Delete] button".**
Corresponding enrollment data in "Data" folder is deleted.

3.4 Log Output

By executing enrollment, verification and identification, a log file is output to the folder which is set in the "LogFolderPath" of "Application setting file".
The following table shows file name and format of log.

- **File name :** " Result.csv "
- **Format :**

No.	Process	Output format
1	Enrollment	[Date] [Time], [Sensor type], [Guide mode], E, [Process result], [Number of retry], [file name of silhouette image]
2	Verification	[Date] [Time], [Sensor type], [Guide mode], V, [Process result], [Number of retry], [file name of silhouette image], [Enrollment data ID]
3	Identification	[Date] [Time], [Sensor type], [Guide mode], I, [Process result], [Number of retry], [file name of silhouette image], [Enrollment data ID and authentication result score (Note)]

Note) In case there are multiple candidates, multiple enrollment data IDs and authentication result scores are output to a log file.

- [Date]

  Format : **yyyymmdd**

  yyyy : year
  mm : month
  dd : day

- [Time]

  Format: **hhmmss**

  hh : hour
  mm : minute
  ss : second

- [Sensor type]

  1: PalmSecure sensor or PalmSecure sensor V2

- [Guide mode]

  0: Without guide
  1: With guide

3.5 How to Build

The following shows how to build Sample application.

Operation

Step1 **Double click solution file, and open solution of Sample application using Visual Studio 2010.**

Step2 **Add a reference of Interface library to project of Sample application.**

Step3 **Add Application key to source code of Sample application, and build it.**

- **VB.NET:**
  Set it to variable "Key" of "Ps_Sample_Apl_VB_InitLibrary" of "PsWindowMain.vb".

- **C#:**
  Set it to variable "Key" of "Ps_Sample_Apl_CS_InitLibrary" of "PsWindowMain.cs".

Chapter4 Error Information

4.1 Error Information

4.1 Error Information

When error occurs, error information is to be notified as follows.

◆ Error notification from Sample Application

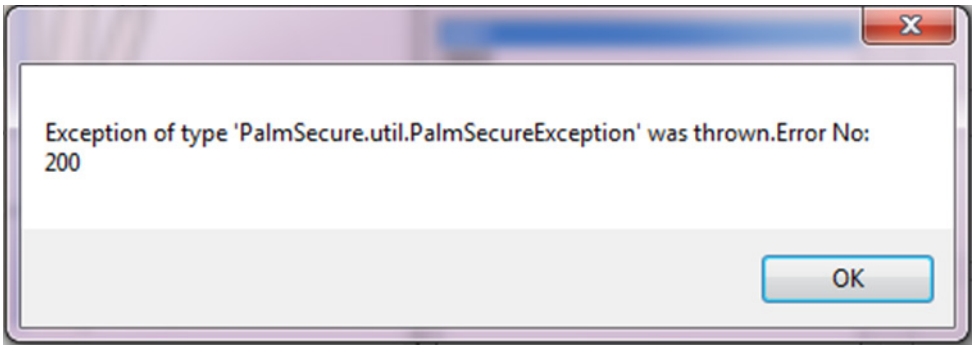
When error occurs in Sample application, error message is to be shown in "Guidance message display area" on the window of Sample application.

>See> For information on "Guidance message display area", refer to the " 3.1. Window Structure".

★Tip **Error message**
Error message is defined in language file (PalmSecureSample.lang).

◆ Error notification from Interface Library

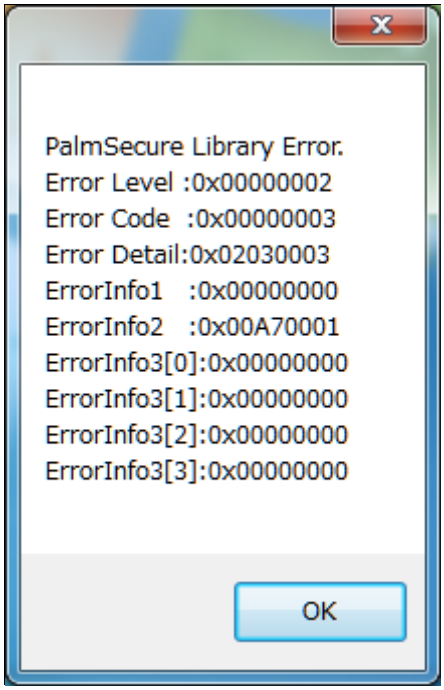
When error occurs in Interface library, error information is to be shown in a dialog box as follows.



>See> For details of error information of Interface library, refer to the "Sample Interface Library for Microsoft .NET Framework Manual".

◆ Error notification from Authentication Library

When error occurs in Authentication library, error information is to be shown in a dialog box as follows.



>See> For details of error information of Authentication library, refer to the "Authentication library reference guide".

Appendix

Appendix A Reference for Source Program

Appendix A Reference for Source Program

As for description of basic processes, the following shows file name and method name corresponding to each process. For details, please refer to description of each source program.

A.1 Initialization

For initialization process, please refer to the following.

- **VB.NET:**
  File name: PsWindowMain.vb
  Method name: Ps_Sample_Apl_VB_InitLibrary
- **C#:**
  File name: PsWindowMain.cs
  Method name: Ps_Sample_Apl_CS_InitLibrary

A.2 Termination

For termination process, please refer to the following.

- **VB.NET:**
  File name: PsWindowMain.vb
  Method name: Ps_Sample_Apl_VB_FinishLibrary
- **C#:**
  File name: PsWindowMain.cs
  Method name: Ps_Sample_Apl_CS_FinishLibrary

A.3 Enrollment

For enrollment process, please refer to the following.

- **VB.NET:**
  File name: PsThreadEnroll.vb
  Method name: Ps_Sample_Apl_VB_ThreadProc
- **C#:**
  File name: PsThreadEnroll.cs
  Method name: Ps_Sample_Apl_CS_ThreadProc

A.4 Verification

For verification process, please refer to the following.

- **VB.NET:**
  File name: PsThreadVerify.vb
  Method name: Ps_Sample_Apl_VB_ThreadProc
- **C#:**
  File name: PsThreadVerify.cs
  Method name: Ps_Sample_Apl_CS_ThreadProc

A.5 Identification

For identification process, please refer to the following.

- **VB.NET:**
  File name: PsThreadIdentify.vb
  Method name: Ps_Sample_Apl_VB_ThreadProc
- **C#:**
  File name: PsThreadIdentify.cs
  Method name: Ps_Sample_Apl_CS_ThreadProc

A.6 Cancellation

For cancellation process, please refer to the following.

- **VB.NET:**

  File name: PsThreadCancel.vb

  Method name: Ps_Sample_Apl_VB_ThreadProc

- **C#:**

  File name: PsThreadCancel.cs

  Method name: Ps_Sample_Apl_CS_ThreadProc

A.7 Callback

For callback process, please refer to the following.

- **VB.NET:**

  File name: PsWindowMain.vb

  Method name: StreamingCallback, StateCallback

- **C#:**

  File name: PsWindowMain.cs

  Method name: StreamingCallback, StateCallback


PalmSecure