Rewritable laser system SG
SDK Sample Code instructions

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Ricoh Co., Ltd.
IMS Business Group

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1. Introduction

1.1. Purpose

This document describes a sample source that provides an example of the SDK (LDMController_w32.dll) that implements the control functions of the rewritable laser system SG (hereinafter referred to as "SG").

The processing implemented in the sample source targeted in this document is intended to promote understanding of the usage of the SDK.

Therefore, since the sample source is mounted in a minimum, it is necessary to incorporate the safety aspect and abnormal system treatment according to the applicable system when constructing the system.

1.2. Description of terms

The definitions of terms used in this document are as follows.

Term	Meaning
SG	This section describes the laser marker equipment in the RICOH product "Reliable Laser System."
SDK	The SDK (LDM Controller_w32.dll) described in the examples is shown in this document.
Configuration file	This section describes the control conditions and communication conditions defined for controlling SG using SDK.
I/F	Interface abbreviation.
Controller	Indicates the control unit of the SG. SDK gives control instructions to the controller in communication.
Java API	This document shows the I/F for the Java language in SDK, which describes examples of use.

1.3. Development environment

The development environment or development platform assumed by the Sample Source is as follows.
Operation has been confirmed only in the following environments.

Programming language	Development platform	Remarks
C/C++	Microsoft Visual Studio 2019	
Java Standard Edition 8 (Java SE8) 32bit	Pleiades All in One Eclipse 2018-09 Windows 32bit full Edition Ultimate	Java SE8 and Eclipse must be Windows 32 bit versions.

1.4. Operating Environment

This sample source assumes operation in the following environments.
Operation has been confirmed only in the following environments.

	OS	CPU	Memory (RAM)	HDD	Other conditions
Windows	Windows 10 (32bit/64bit)	1.6GHz And above	1.5GB And above	10GB And above	
Other (C/C++)	・ VisualC++2015-2019 Redistributable Package (Microsoft Visual C++ 2015-2019 Redistributable) must have been installed				
Other (Java)	・ Pleiades All in One Eclipse 2018-09 Windows 32bit Full Edition Ultimate must have been installed				

1.5. Configuration of provision

The Sample Source is provided as part of the package of the "Reliable Laser System SG SDK".
The Rewritable Laser System SG SDK is provided in the following configuration.

No.	SDK configuration folder	Overview
1	Doc	This document and the SDK Interface Specification are located.
2	Sdk_obj	The SDK body (dll) and ini files are arranged.
3	SDKSample	Place sample sources for C/C++.
4	LDMControllerJava	A Java API project.

The Java API project (LDMController Java folder) is organized as follows.
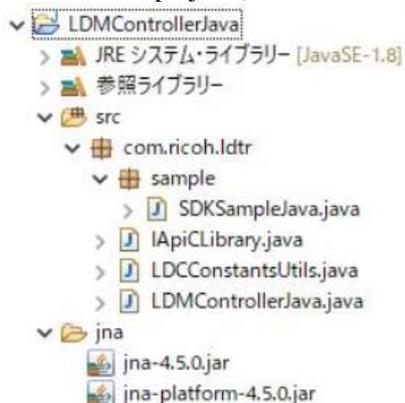
No.	SDK Java configuration	Overview
1	Src	Position the Java API and sample source files.
2	Com.ricoh.ldtr	The Java API package. Position the Java API source file.
3	Com.ricoh.ldtr.sample	Package of Java language samples. Position the source file (SDKSampleJava.java) of the Java language sample.
4	Jna	The JNA JAR file used by the Java API is located.

The sample source also provides examples of the development of C/C++ and Java languages, respectively.
The C/C++ language sample will be provided as a Microsoft Visual Studio 2019 project and implemented in C++.
A sample Java language is provided as a project for Pleiades All in One Eclipse Windows 32 bit full Edition Ultimate.
The correspondence between each programming language and the project file is as follows.

No.	Target programming language	Sample storage folder or package name	Project file name or project name
1	C/C++ language	SDKSample	SDKSample.vcxproj
2	For Java language	Com.ricoh.ldtr.sample	LDMControllerJava

2. Method of execution

2.1. Caution

The minimum SG controller control process implemented in the sample source can be executed by performing the procedure after "Build" in the next chapter.

When the controlled SG controller is in non-emulated mode, the laser beam is actually irradiated.

Therefore, it is necessary to use the product after paying attention to safety aspects such as enclosing the SG controller with a protective enclosure.

Refer to "SG_Software Usage Procedure for the Relevable Laser System. pdf" for the emulation mode setting.

2.2. Build

2.2.1. How to build a C/C++ verbal sample

Opening SDKSample.vcxproj in each sample storage folder in Microsoft Visual Studio 2019 enables you to view/build sample sources.

Since each sample source is set to link explicitly "LDM Controller_w32.dll" in the SDK package, it can be built without setting the path.

After a successful build, "SDKSample_w32.exe" is placed in the "sdk_obj" folder.

2.2.2. How to build a Java language sample

By importing files from the LDMController Java package in the development environment, the sample source can be checked and built. The procedures are described below on the assumption that "Eclipse" is used as the development environment.

① Start Eclipse as an administrator and implement the following procedures on Eclipse.

② Import the LDM Controller Java project.

③ Enables you to refer to the "sdk_obj" folder when executing a Java sample.

[Setting example 1]

In the Execution Configuration > Environment tab of the sample class (SDKSampleJava.java), register the environment variables as follows.

Variable: PATH

Value: The absolute path to the "sdk_obj" folder

[Setting example 2]

Specify the absolute path of the "sdk_obj" folder in the reference library for the sample class (SDKSampleJava.java).

④ Build the LDM Controller Java project.

2.3. Method of execution

When executing a C/C++ language sample, execute "SDKSample_w32.exe" placed in "sdk_obj" after executing the build to execute the minimum SG controller control process implemented in the sample source.

When running a Java sample (SDKSampleJava.java), the procedure described in "How to Build a Java Language Sample" can be executed on the Eclipse started as an administrator.How to build a Java language sample

Note that the setting file "LDMC_Profile1.dat" placed in "sdk_obj" shall be the set value corresponding to the trial environment.

(See the SG_SDK interface specification for the rewritable laser system.pdf.)

Setup of the SG controller to be controlled and registration of the layout file shall be carried out separately referring to the "SG_Software Usage Procedure of the Reliable Laser System.pdf".

2.4. Run-time flow

When executing "SDKSample_w32.exe" to run a C/C++ language sample, the following message is displayed.
If you want to run a sample of the Java language, you can run the sample class (SDKSampleJava.java) on the Eclipse started as an administrator. Sample behavior in the Java language is similar to that in the C/C++ language.

```
Start Sample
Select irradiation mode...
1:Erase Only  2:Mark Only 3:Erase And Mark other:Cancel
```

The irradiation mode of the SG controller is now selected.
    1: Delete only
    2: Print only
    3: Print after deletion
    Other than above: Cancel (Exit)
Enter √Example: 1 and press Enter.

```
1
EraseSample Start
!!Attention!!
When non emulate mode,irradiate laser.
After confirming safety, press 'y' or 'Y' key (other key:Process cancel)...
```

The preparation process is completed and a confirmation message is displayed immediately before the start of irradiation.
    'y' or 'Y': Continue processing (Laser illuminated in non-emulated mode)
    Other than above: Cancel (Exit)
Enter √example: y and click Enter.

```
y
 Wait JobComplete . Completed.
EraseSample Success
Finish Sample
Please press any key...
```

The irradiation process starts and "Success" is displayed when the irradiation is completed.
When you press any key, the program exits and the screen closes.
For Java, press Enter to finish the process.

This is all.