

# DT-X400 Series

## Android 8.1 Quick Start Guide

This document is a Development Guide Book for DT-X400 application developers.



No part of this document may be produced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of CASIO COMPUTER CO., LTD. in Tokyo Japan. Information in this document is subject to change without advance notice.

CASIO COMPUTER CO., LTD. makes no representations or warranties with respect to the contents or use of this manual and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose.

© 2018 CASIO COMPUTER CO., LTD.

- The Bluetooth word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by CASIO COMPUTER CO., LTD. is under license. Other trademarks and trade names are those of their respective owners.
- Wi-Fi is a registered trademark of Wi-Fi Alliance.
- Android, Android Wear, Google, Google Play, Google Now and other marks are trademarks of Google LLC.
- Other company, product and service names used in this manual also may be trademarks or registered trademarks of others.

### - Table of contents -

1. C	Overview ·····2
1.1	Notes of this development kit ······2
1.2	Version of this development kit ······3
1.3	Structure of the development kit ······4
1.4	About manuals ······5
2. A	Application development requirement······6
2.1	Needed programing knowledges······6
2.2	Required hardware 6
2.3	Required system ······7
2.4	Required software8
3. lı	nstalling the development environment ······9
3.1	Installation steps of the development environment ······9
3.2	Installing Android Studio10
3.3	Downloading Android SDK and USB driver ······15
3.4	Inport and Updating Device Library (AAR) ······18
3	.4.1 Preparations
3	.4.2 Registering DeviceLibrary (AAR) ······18
3	.4.3 Dependency check of DeviceLibrary (AAR)
3	.4.4 Registering Help files (Javadoc) ······24
3	.4.5 Updating of DeviceLibrary (AAR)26
3.5	How to use the DeviceLibrary (AAR)28
4. A	Application development and debug······29
4.1	Enabling USB debugging ······29
4.2	Installing USB driver ······30
4.3	Settings ADB (Android Debug Bridge)······34
4.4	Debugging application 35

## 1. Overview

This document is a development guidebook written for the DT-X400 application developers.

## 1.1 Notes of this development kit

Notes for using this development kit are as follows.

• There is a dependency between the version of Android Studio and the version of the DeviceLibrary. For details, refer to "2.4 Required software (p.8)" in the Quick Start Guide (this document).

Please contact your distributor to get the latest version of development Kit.

## 1.2 Version of this development kit

The version number of this development kit consists of a combination of major version and minor version, as shown below.



The major number represents the version of DeviceLibrary (i.e. DeviceLibrary.aar).

So, when a newer version of development kit is released, if it includes newer version of DeviceLibrary, its major version number is increased, and the minor version is returned to zero.

If changes other than DeviceLibrary (i.e. manuals, tools, etc.) are included, its minor version number is increased.

## **1.3 Structure of the development kit**

The following figure shows the structure of this kit.

Folder / File	Description		
QuickStartGuide.lnk	Read this document first.		
/MANUAL	/This folder contains manuals.		
QuickStartGuide.pdf	Quick start guide		
SoftwareManual.pdf	Software manual		
DeviceLibraryManual.pdf	Device library manual		
HardwareManual.pdf	Hardware manual		
/SOFTWARE	/This folder contains softwares		
/BDK	/Basic development kit		
/CasioAndroidAddons	/Casio Addons for android		
/bin	/Program's folder		
CASIOAndroidAddons0100020012.apk	CasioAndroidAddons		
	(binary)		
/manual	/Manual's folder		
CasioAndroidAddonsManual.pdf	Casio Android Addons		
	manual		
/DeviceLibrary	/Device Library's folder		
/javadoc	/javadoc's folder		
index.html	javadoc index file		
etc.	Other files.		
/bin	/Program's folder		
DeviceLibrary.aar	Device Library file (binary)		
/samples	/Sample file's folder		
KeyLibrarySample.zip	KeyLibrary samples		
SymbolScan.zip	ScannerLibrary samples		
RangeScan.zip			
InverseScan.zip			
CenteringWindowScan.zip			
TriggerScan.zip			
ImageCapture.zip			
TOOLS	/Tools folder		
/SupportTools	SupportTool folder		
/manual	/Manual's folder		
KittingManual.pdf	Kitting manual		
FLDroidManual.pdf	FLDroid manual		
/bin	/Program's folder		
KitData.xls	Kitting scenario file		
/OSUpdateService	/OSUpdateService folder		
/bin	/Program's folder		
OSUpdateService0100010004.apk	OS Update Service		
/samples	/Sample file's folder		
OSUpdateSample.zip	OS Update Sample		

## 1.4 About manuals

The following is a list of manuals provided with this development kit.

Title	Contents
Quick start guide	This document
Software manual	Software specification of DT-X400
DeviceLibrary manual	Describing the specifications of the device library
CasioAndroidAddons manual	Describing the specifications of the CasioAndroidAddons.
Kitting manual	Describing the specifications of the Kitting.
FLDroid manual	Describing the specifications of the FLDroid.

## 2. Application development requirement

## 2.1 Needed programing knowledges

DT-X400 application can be developped using the following language.

• Java

And, also the knowledge about the followings are needed.

- Android OS
- Android allication development
- Android Studio
- Networks, etc.

## 2.2 Required hardware

Product name	Remarks
DT-X400	

## 2.3 Required system

#### [Windows]

- Microsoft® Windows® 7/8/10 (32- or 64-bit)
- 3 GB RAM minimum, 8 GB RAM recommended. plus 1 GB for the Android Emulator
- 2 GB of available disk space minimum
- 4 GB Recommended (500 MB for IDE + 1.5 GB for Android SDK and emulator system image)
- 1280 x 800 minimum screen resolution
- For accelerated emulator: Intel® processor with support for Intel® VT-x, Intel® EM64T (Intel® 64), and Execute Disable (XD) Bit functionality

#### [Mac]

- Mac® OS X® 10.10 (Yosemite) or higher, up to 10.13 (macOS Sierra)
- 3 GB RAM minimum, 8 GB RAM recommended; plus 1 GB for the Android Emulator
- 2 GB of available disk space minimum
- 4 GB Recommended (500 MB for IDE + 1.5 GB for Android SDK and emulator system image)
- 1280 x 800 minimum screen resolution

#### [Linux]

- GNOME or KDE desktop
- Tested on Ubuntu® 18.04 LTS, Trusty Tahr (64-bit distribution capable of running 32-bit applications)
- 64-bit distribution capable of running 32-bit applications
- GNU C Library (glibc) 2.19 or later
- 3 GB RAM minimum, 8 GB RAM recommended; plus 1 GB for the Android Emulator
- 2 GB of available disk space minimum
- 4 GB Recommended (500 MB for IDE + 1.5 GB for Android SDK and emulator system image)
- 1280 x 800 minimum screen resolution
- For accelerated emulator: Intel<sup>®</sup> processor with support for Intel<sup>®</sup> VT-x, Intel<sup>®</sup> EM64T (Intel<sup>®</sup> 64), and Execute Disable (XD) Bit functionality, or AMD processor with support for AMD Virtualization<sup>™</sup> (AMD-V<sup>™</sup>)

#### Note!

The explanation after the next chapter is all for Windows (64bit). If you are using Mac or Linux as a development environment, you are responsible for building the environment at your own risk.

## 2.4 Required software

In order to develop DT-X400 application programs, it needs the development environment of Android.

Development language	Development platform (Recommended)
Java	Android Studio 3.0 or above Android SDK (API level 26 - 27) Google USB driver JDK7 or above(Bundled with Android Studio)

#### **Development platform (Recommended)**

Note!

The basic development kit was confirmed to work with the following Android Studio combination when it released.

When using the basic development kit please use the following combination or above. However, there is a possibility that something wrong with work if you use the latest unconfirmed Android Studio version. If there is something wrong with work, please try with the confirmed below combination.

Software	Version
Android Studio	3.2.1
Gradle version (Android Studio)	4.6
Android Plugin Version (Android	3.2.4
Studio)	
Development Kit	2.05.1

You can get all released version of Android Studio from the following web site. https://developer.android.com/studio/archive

## 3. Installing the development environment

Due to version upgrade of Android SDK, environment may not be installed by the following procedure. In that case, please refer to the procedure described on Google's website etc. and build the environment.

## 3.1 Installation steps of the development environment

The followings are the basic steps to install the development environment.

#### (1) Installing Android Studio

Install Android Studio to your PC.

Regarding the requirement of Android Studio, refer "2.4 Required software (p.8)". Regarding Android Studio installation detail, refer "3.2 Installing Android Studio (p.10)".

#### (2) Downloading of Android SDK/USB driver

Download Android SDK and USB driver from Google via Android Studio. Android SDK will be installed automatically after downloading. Regarding USB driver installation detail, refer "4.2 Installing USB driver (p.30)". Regarding the requirement of Android SDK, refer "2.4 Required software (p.8)".

#### (3) Setting PATH

Add the path to Android SDK to "PATH" of the system environment variable. For the setting method, refer to "4.3 Settings ADB (Android Debug Bridge) (p.34)".

#### (4) Installing DeviceLibrary

Place the DeviceLibrary (AAR) to anywhere on your PC, and register it to the each of your projects via Android Studio.

Regarding DeviceLibrary installation, refere "3.4 Inport and Updating Device Library (p.18)".

#### (5) Application development and debug

Use the installed Android Studio and SDK to develop the application. For details on how to use the device library, refer to "Device Library Manual".

To debug the application, connect the PC and the DT-X400 via the ADB (Android Debug Bridge) interface. For details, see "4 Application development and debug (p.29) ".

## 3.2 Installing Android Studio

Android Studio can be downloaded from Android site of Google. https://developer.android.com/studio/



Android Studio provides the fastest tools for building apps on every type of Android device.





#### Agree to the "Terms of Conditions", then start downloading.

#### Download Android Studio

Before downloading, you must agree to the following terms and conditions.

Terms and Conditions	
This is the Android Software Development Kit License Agreement	
1. Introduction	
1.1 The Android Software Development Kit (referred to in the License Agreement as the "SDK" and specifically including the Android system files, packaged APIs, and Google APIs add-ons) is licensed to you subject to the terms of the License Agreement. The License Agreement forms a legally binding contract between you and Google in relation to your use of the SDK.	
1.2 "Android" means the Android software stack for devices, as made available under the Android Open Source Project, which is located at the following URL: http://source.android.com/, as updated from time to time.	
1.3 A "compatible implementation" means any Android device that (i) complies with the Android Compatibility Definition document, which can be found at the Android compatibility website <ul> <li>✓</li> </ul>	
I have read and agree with the above terms and conditions	
DOWNLOAD ANDROID STUDIO FOR WINDOWS	

Once executing the downloaded file, follow the instructions to proceed the installation.

During installation, you will be prompted to specify the installation destination by the dialog below. Follow the instructions to proceed the installation.

👅 Android Studio	Setup	_		×
	Configuration Settings			
<u> </u>	Install Locations			
Android Studio	Installation Location			
The location Click Browse	specified must have at least 500MB of free space to customize:	ce.		
C:¥Program	Files¥Android¥Android Studio		Browse	
	< Back	Next >	Car	ncel

When the dialog shown below is displayed, installation of Android Studio is completed.



Next, select whether to use the previous setting or not. If you do not want to use the previous setting, please select Do not import settings.

👳 Complete Installation	×
Import Studio settings from:	
C Dustom location. Config folder or installation home of the previous ve	sion
	] •
O Do not import settings	
ок	

The Setup Wizard will start, so follow the instructions.



During installation, you will be prompted to specify the installation destination by the dialog below. The "Android SDK Installation Location" on the figure below is also necessary when installing the USB driver, it's better to take a note.

Android Studio Setup Wizard	- 🗆 X					
SDK Components Setup						
Check the components you want to update/install. Click Next to c	ontinue.					
Android SDK Platform	The collection of Android platform APIs, tools and utilities that					
API 28 - (168 MB)	enables you to debug, pronie, and compile your apps.					
Performance (Intel ® HAXM) – (3.74 MB)	The setup wizard will update your current Android SDK installation (if necessary) or install a new version.					
Android Virtual Device – (851 MB)						
Android SDK Location:	Total download size: 927 MB					
C:¥Users¥edger¥AppData¥Local¥Android¥Sdk	Disk space available on drive : 300 GB					
A Target folder is neither empty nor does it point to an existing	SDK installation.           Previous         Next         Cancel         Finish					

This is the end of the Setup Wizard. If you do not have any problem after confirming "Finish".

ndroid Studio Setup Wizard		_	×
Verify Settings			
f you want to review or change any of your	installation settings, click Previous,		
Current Settings:	instantion settings, energinedas		
Setup Type: Standard			
SDK Folder: C:¥Users¥edger¥AppData¥Local¥Android	¥Sdk		
Total Download Size: 1.13 GB			
SDK Components to Download:			
Android Emulator	288 MB		
	55.6 MB		
Android SDK Build-Tools 28.0.2	33.0 140		
Android SDK Build-Tools 28.0.2 Android SDK Platform 28	72.1 MB		
Android SDK Build-Tools 28.0.2 Android SDK Platform 28 Android SDK Platform-Tools	72.1 MB 5.9 MB		ł
Android SDK Build-Tools 28.0.2 Android SDK Platform 28 Android SDK Platform-Tools Android SDK Tools	72.1 MB 5.9 MB 149 MB		ł

#### Downloading Components begins.

Android Studio Setup Wizard		—		×
Downloading Components				
Preparing "Install Android SDK Build-Tools 28.0.2 (revision: Downloading https://dl.google.com/android/repository/build-to "Install Android SDK Build-Tools 28.0.2 (revision: 28.0.2)" r Installing Android SDK Build-Tools 28.0.2 (revision: 28.0.2)" c "Install Android SDK Build-Tools 28.0.2 (revision: 28.0.2)" c Parsing C:¥Users¥edger¥AppData¥Local¥Android¥Sdk¥eulator¥pac Parsing C:¥Users¥edger¥AppData¥Local¥Android¥Sdk¥eutras¥andro Parsing C:¥Users¥edger¥AppData¥Local¥Android¥Sdk¥eutras¥intel .xml Parsing C:¥Users¥edger¥AppData¥Local¥Android¥Sdk¥patcher¥v4¥p Parsing C:¥Users¥edger¥AppData¥Local¥Android¥Sdk¥patcher¥patcher¥v4¥p Parsing C:¥Users¥edger¥AppData¥Local¥Android¥Sdk¥patcher¥v4¥p Parsing C:¥Users¥edger¥AppData¥Local¥Android¥Sdk¥patcher¥v4¥p	28.0.2)". ols_r28.0.2-windows.zip eady. ppData¥Local¥Android¥Sdk¥build-too omplete. inished. 28.0.2¥package.xml kæge.xml id¥m2repository¥package.xml e¥m2repository¥package.xml ¥Hardware_Accelerated_Execution_Ma ackage.xml ls¥package.xml droid-28¥package.xml e.xml	∣s¥28.0. nager¥pa	2 .ckage	
	Previous Next Ca	ncel	<u>F</u> inisł	n

When you finish, AndroidStudio will start up.

## 3.3 Downloading Android SDK and USB driver

Launch Android Studio, and chose "SDK Manager" from Configure tab.



Select "SDK Platform" tab, then check "Android 8.1 (API Level 27)".



Default Settings			×
Q.*	Appearance & Behavior > System Settings > Android SDK		Rese
V Appearance & Rehavior	Manager for the Android SDK and Tools used by Android Studio		
Annessance	Android SDK Location: CXI kerr Kedger KApp Data XI ocal KApdroid XSdk	Edit	
Appearance	Android SDK Eddation: C+05ers+edger+AppData+Eddat+Android+Sdk	Curt	
Menus and Toolbars	SDK Platforms SDK Tools SDK Update Sites		
<ul> <li>System Settings</li> </ul>	Below are the available SDK developer tools. Once installed, Android S	Studio will	
Passwords	automatically check for updates. Check "show package details" to disp	lay available	
HTTP Proxy	versions of an SDK Tool.		
Undates	Name	Version	Status
oportes -	Android SDK Build-Tools		Installed
Usage Statistics	GPU Debugging tools		Not Installed
Android SDK	CMake		Not Installed
Notifications		2	Not Installed
Onick Lists	Android Auto API Simulators	1.	Not installed
quick bits	Android Auto Desktop Head Unit emulator	1.1	Not installed
Path Variables	Android SDK Platform-Tools	28.0.1	Installed
Keymap	Android SDK Tools	26.1.1	installed
> Editor	Documentation for Android SDK	1	Not installed
Physics	Google Play APK Expansion library	1	Not installed
riagnis	Google Play Instant Development SDK	1.4.0	Not installed
> Build, Execution, Deployment	Google Play Licensing Library	1	Not installed
Kotlin Updates	Google Play services	49	Not installed
> Tools	Google USB Driver	11	Not installed
Android Studio	Google Web Driver	2	Not installed
Anarola stadio	Intel x86 Emulator Accelerator (HAXM Installer)	7.3.0	Installed
	MUN Support Reportant	17.1.4626360	Not installed
	Constraintl avout for Android		Not lostalled
	Solver for ConstraintLayout		Not installed
	Android Support Repository	47.0.0	Installed
	Google Repository	58	Installed
			Show Package Details
•			Show Package Deta

Then, select "SDK Tools" tab and check "Google USB Driver".

When you press "OK" the following dialog will be displayed, please press "OK".

👳 Confirm Change			
	Image: The following components will be installed:		
	- Google USB Driver vers - Sources for Android 27 - Android SDK Platform 2	ion 11 revision 1 7 revision 3	
	OK Cancel		

Once agree to the "License Agreement", then press "OK" to start installation.



The downloaded files are stored under "Android SDK Installation Location" that you noted in "3.2 Installing Android Studio (p.10) ".

The USB driver is stored in "extras\google\usb\_driver" under "Android SDK Installation Location".

## 3.4 Inport and Updating Device Library (AAR)

This chapter explains how to register the device library and its help file to Android Studio project.

## 3.4.1 Preparations

Device Library (AAR) and its help files (Javadoc) are needed to be registered to the each project via Android Studio. Therefore, the method described here is necessary every time when creating new project that uses the device library.

The following chapter explains the procedure for registering the device library and its help files to the project. It is better to copy the DeviceLibrary and its help files from the DT-X400 Basic Development Kit to the local folder beforehand.

## 3.4.2 Registering DeviceLibrary (AAR)

Once open the project from the Android Studio, open the "New Module" dialog with [File]  $\rightarrow$  [New]  $\rightarrow$  New Module.



🕭 Create New Module			×
New Module			
Ş			٢
Android Wear Module	Android TV Module	Android Things Module	Import Gradle Project
Import Eclipse ADT Project	Import JAR/.AAR Package	Java Library	
		Previous	Next Cancel Finish

On the dialog shown below, select "Import .JAR/.AAR Package" and proceed with "Next".

Press the 🛄 of "File name" and select the DeviceLibrary (AAR) you copied beforehand.

👳 Create New Module	;		×
k Impo	rt Module from Library	Select Package × Select iar or aar package to import as a new module	
File name: Subproject name:	C:/Users/edger/AndroidStudioProjects/test01 test01	Image: Second Stress	
		Previous Next Cancel	Finish

👳 test01 [C:¥Users¥edger¥AndroidStudioProjects¥test01] - ...¥app¥src¥main¥res¥layout¥conte File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window here ston app in the sec in the main is the sec in the section of - ⊕≑|☆-⊩ 👘 Android C MainActivity.java × 🛃 content\_ma 😥 <u>1</u>: Project 📑 app Q #- ⊩ Palette > manifests Ab TextView • 📄 java > Common Button 🗸 📄 res Text Z: Structure drawable ImageVie... Buttons I Recycler... Iayout Widgets <> <fragme... 📥 activity\_main.xml 5 🛃 content\_main.xml ScrollView Layouts menu Switch > Captures Containers mipmap > > 🖿 values 6 **☆**- ⊪-Component Tree DeviceLibrary Gradle Scripts > ConstraintLayout Ab TextView - "Hello W

By the above, the registration of the device library to the project was completed. You can see that the AAR file name has been added to the Android Studio Project tree.

## 3.4.3 Dependency check of DeviceLibrary (AAR)

The registration of the device library was completed with "3.4.2Registering DeviceLibrary (p.18)". However, somehow the dependency relationship of the DeviceLibrary to the project is not set correctly in some cases.

First, select "Project Structure ..." from File menu.



Open the "Dependencies" tab and check if "DeviceLibrary" (red frame in the figure below) exists. If it exists, subsequent operations are unnecessary.

Project Structure		×
+ -	Properties Signing Flavors Build Types Dependencies	
SDK Location Project - Developer Services - Ads Authentication Notifications 	<pre>{include=[*jar], dir=libs} m com.android.support.appcompat-v7:28.+ m com.android.support.constraint.constraint-layout:1.0.2 m com.android.support.design:28.+ m junitjunit:4.12 m com.android.support.test.runner:1.0.1 m com.android.support.test.espresso.espresso.core:3.0.1 . DeviceLibrary </pre>	Scope Implementation Implementation Implementation Unit Test imple Test implemen Implementation
		OK Cancel

If it does not exist, press "+ button" at right end and select "Module dependency".

Project Structure			×	
+ -	Properties Signing Flavors Build Types Dependencies			
SDK Location		Scope	+	
Project	{include=[*,jar], dir=libs}	Implementation		
- Developer Services -	m com.android.support:appcompat-v7:28.+	Implementation	<u>m 1</u> L	brary dependency
Ads	m com.android.support.constraint:constraint-layout:1.0.2	Implementation		ar dependency
Authentication	m com.android.support:design:28.+	Implementation		
Notifications	m junitjunit4.12	Unit Test imple.		
Modules	m com.android.support.test:runner:1.0.1	Test implemen		
app Deviced ibrany	m com.android.support.test.espresso:espresso-core:3.0.1	Test implemen		
		OK Car	ncel	

Confirm that "DeviceLibrary" is displayed as shown below and press "OK".

Choose Modules	×
Select the modules the current module should depend on:	
E :DeviceLibrary	
OK Cano	:el

#### By the above, "DeviceLibrary" has been added to the tab of "Dependencies".

👳 Project Structure			×
+ -	Properties Signing Flavors Build Types Dependencies		
SDK Location Project - Developer Services - Ads Authentication Notifications 	<pre>(include=[*jar], dir=libs) m com.android.support.appcompat-v7:28.+ m com.android.support.constraint.constraint-layout:1.0.2 m com.android.support.design:28.+ m junitjunit:4.12 m com.android.support.test.runner:1.0.1 m com.android.support.test.espresso:espresso-core:3.0.1 . ; :DeviceLibrary</pre>	Scope Implementation Implementation Implementation Unit Test imple	+ - + +
		OK Can	cel

## 3.4.4 Registering Help files (Javadoc)

This section explains how to enable pop-up help (pops up help message when you move the cursor to the function name) of Device Library.

First, associate Javadoc which is the help file of Device Libraries to Device Library registered to Android Studio.

The Javadoc file can be placed anywhere as long as it can be referenced on the PC. It assumes that it is placed in the "app/docs/DeviceLibrary" folder here.

When registration of the device library is completed, a xml file (Gradle\_\_artifacts\_DeviceLibrary.xml) whose name is same as the library is automatically created under the ".Idea/library" folder. At moment, the item "<JAVADOC>" in this xml file has not been set. Specify the location of the javadoc file (folder path with index.html) in this item "<JAVADOC>". (see note)

Note!

If a xml file is not created, restart Android Studio.

<JAVADOC>
<root url="file://\$PROJECT\_DIR\$/app/docs/DeviceLibrary" />
</JAVADOC>



By the above, the registration of the help file was completed. Next, enable "Quick documentation on mouse move" which is the function of Android Studio. Select "Settings ..." from File menu of Android Studio.



Next, check a box of "Show quick documentation on mouse move" in "Editor".

💿 Settings	X
Q- > Appearance & Behavior Keymap ~ Editor	Editor > General Mouse Honor "CamelHumps" words settings when selecting on double click
General         Font         Color Scheme         Code Style         Inspections         File and Code Templates         File Encodings         Live Templates         File Types	Change font size (Zoom) with Ctrl+Mouse Wheel Carl Enable Drag'n'Drop functionality in editor Soft Wraps Use soft wraps in editor Use original line's indent for wrapped parts Additional shift: Show soft wrap indicators for current line only Virtual Spare
Layout Editor Copyright Data Binding Emmet Images Intentions Language Injections	Image: Wirtual space       Allow placement of caret after end of line       Allow placement of caret inside tabs       Show virtual space at file bottom
Spelling TODO Plugins > Version Control > Build, Execution, Deployment > Languages & Frameworks	Ship training spaces on save.       Imodified times *         Imodified times *       Imodified timos

Now, if you hover the mouse cursor over the function name, help of the function will be popped up.



## 3.4.5 Updating of DeviceLibrary (AAR)

In order to update the device control library registered in the project of Android Studio (exchange to the new version), once you need to unregister (unassociate) them and register new one.

This section explains how to unregister (unassociate) them from the project.

#### (1) Unassociate Library ( AAR )

Open your project in Android Studio and select [File] -> [Project Structure ...]. Select "app" from "Modules" in the left frame and open the "Dependencies" tab. Select DeviceLibrary and press the right "-" button to cancel the association.

👳 Project Structure		×
+ -	Properties Signing Flavors Build Types Dependencies	
SDK Location Project - Developer Services - Ads Authentication Notifications 	<pre>{include=[*jar], dir=libs) in com.android.support.appcompat-v7:28.0.0-rc02 in com.android.support.constraint:clayout:1.1.3 in com.android.support.design:28.0.0-rc01 in junitjunit:4.12 in com.android.support.test:runner:1.0.2 in com.android.support.test.espresso-core:3.0.2 iii :DeviceLibrary </pre>	Scope + Implementation Implementation Implementation Unit Test implemen. Test implemen. Implementation
		OK Cancel

#### (2) Unregister Library (AAR)

Next, select "DeviceLibrary" from "Modules" in the left frame and press "- button" in the upper left.

+ -	Dependencies			
SDK Location Project Developer Services - Ads Authentication Notifications Modules App DeviceLibrary		Nothing to show	Scope	+ - + +
			ОК С	Cancel

A dialog to confirm deletion of DeviceLibrary appears, so press "Yes".



By the above, Device Library was unregistered. Follow "3.4Inport and Updating Device Library(p.18)" to register the new Device Library.

## 3.5 How to use the DeviceLibrary (AAR)

To use an AAR file, just like jar, it is needed to import it in order to create class object.



If a class that has not been imported is used, popup message as shown below comes.



## 4. Application development and debug

In order to develop / debug applications using DT-X400, the following preparation is necessary.

- (1) Enable USB debugging (ADB connection) of DT-X400.
- (2) Install DT-X400 USB driver to your PC.
- (3) Set PATH to the debug tools on your PC.

These steps are described below.

## 4.1 Enabling USB debugging

Since USB debugging is a function for developers, you first need to activate the Developer options by the following procedure.

Open [Settings]  $\rightarrow$  [About phone] and tap "Build number" on the bottom line seven times, [Developer options] is added above [About phone].



Tap [Developer options] and enable "USB debugging" on the opened screen.



## 4.2 Installing USB driver

Install the USB driver for connecting the DT-X400 and PC with the ADB (Android Debug Bridge) protocol.

Files necessary for installation are downloaded as described in "3.3 Downloading Android SDK and USB driver (p.15)".

Connect the DT-X400 to a PC using a USB cable or a USB cradle. Then, open the Device Manager by [Control Panel]  $\rightarrow$  [Hardware and Sound]  $\rightarrow$  [Device Manager].



In the Device Manager, "ADB Interface" is displayed as an unknown device as shown below.

🚔 Device Manager	
File Action View Help	
Image: State is         Image: State is	
▶ <mark>I III Portable Devices</mark> ▶ <sup>1</sup> <sup>T</sup> Ports (COM & LPT)	
P Processors     J Sound, video and game controllers	
> -{⊊ > Storage controllers > -{≣ > start devices > - ∰ Universal Serial Bus controllers	

By right-click the red frame ("Android") in the above figure, displays its properties, and press [Update Driver].

ADB Interface Properties	
General Driver Details	Update Driver Software - ADB Interface
ADB Interface	How do you want to search for driver software?
Device type: Other devices	
Manufacturer: Unknown	Search automatically for updated driver software
Location: 0002.0003.0000.001.000.000.000.000	for your device, unless you've disabled this feature in your device installation
Device status	settings.
The drivers for this device are not installed. (Code 28)	Provise my computer for driver software
There is no driver selected for the device information set or element.	Locate and install driver software manually.
To find a driver for this device, click Update Driver.	
OK Cancel	Cancel

When the dialog below is displayed, press "Let me pick from a list of drivers on my computer " at the bottom. In the driver list, with "Show All Devices" is highlighted and press [Next].

💽 🧕 Update Driver Software - ADB Interface	🔽 🗿 🔟 Update Driver Software - ADB Interface
Browse for driver software on your computer	Select your device's type from the list below.
Search for driver software in this location: C:\Users\sakanDocuments  I Include subfolders	Common hardware types: Show All Devices G1883 Device Class AVC Devices Batteries Biometric Devices Blometric Devices Computer Computer
Let me pick from a list of device drivers on my computer This list will show installed driver software compatible with the device, and all driver software in the same category as the device.	
Next Cancel	Next Cancel

When you click [Hard Disk...] in the displayed dialog, a dialog box for specifying the location of the driver opens, so click [Browse...] to open the file dialog box. In the file dialog box, search for "extras\google\usb\_driver\android\_winusb.inf" under the "Android SDK Installation Location" that you took note in "3.3 Downloading Android SDK and USB driver (p.15)" and specify it.

	Locate File				×
🚱 🗕 Update Driver Software - ADB Interface	Look in:	\rm usb_driver	•	G 🏚 📂 🛄 🕶	
	(Area	Name	*	Date modified	Туре
Select the device driver you want to install for this hardware.		퉬 amd64		5/11/2017 1:22 PM	File folder
Select the manufacturer and model of your hardware device and then click Next. If you have a	Recent Places	i386		5/11/2017 1:22 PM	File folder
disk that contains the driver you want to install, click Have Disk.		android_wint	usb	5/11/2017 1:22 PM	Setup Infc
	Desktop				
Manufacturer A Model	Libraries				
(Enhanced Storage Device)					
(Generic USB Hub)	100 N				
(Standard CD.ROM driver)	Computer				
This driver is digitally signed.	Network	•			,
		File name:	android_winush		Open
Next Cancel		Files of type:	Getup Information (*.inf)		Cancel
	L				
	(		↓ ↓		
Install From Disk	Install From Disk				
Inset the manufacturer's installation disk, and then OK make sure that the correct drive is selected below. Cancel	insert the make s	he manufacturer's in: sure that the correct (	stallation disk, and then the selected below.	OK Cancel	
Copy manufacturer's files from: A:\ Browse	Copy m C:\Use	nanufacturer's files fro ers\casio\AppData\	om: Local\Android\sdk\extra 👻 📑	owse	

The following driver selection screen will appear. Select "Android Composite ADB Interface" and press [Next]. Answer "Yes" to "Driver Update Warning" and press "Install" of "Windows Security" dialog.

► <b>■</b>	Update Driver Warning
🚱 🔟 Update Driver Software - ADB Interface	Installing this device drives is not recommended because Windows
Select the device driver you want to install for this hardware.  Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.	A installing this device during is not recommended because windows is not compatible, your hardware will not work correctly and your computer might become unstable or stop working completely. Do you want to continue installing this driver?
	Yes No
Model	
Android ADB Interface	Windows Security
Android Bootloader Interface	Would you like to install this device software?
This driver has an Authenticode(tm) signature.	Name: Google, Inc. Publisher: Google Inc
Lell me why driver signing is important	Always trust software from "Google Inc".
Next Game	You should only install driver software from publishers you trust. <u>How can1</u> <u>decide which device software is safe to install?</u>

By the above, the installation of the USB driver for ADB protocol was completed.

Press "OK" when the follow dialog is shown on DT-X400.



## 4.3 Settings ADB (Android Debug Bridge)

In order to use Android SDK tools such as ADB from the command prompt, it is needed to add the path to Android SDK to the system environment variable. Add the following two paths.

The "tools" folder under "Android SDK Installation Location" that you took note. The "platform-tools" folder under "Android SDK Installation Location".

Jser variables h	or sakai
Variable	Value
TEMP	%USERPROFILE%\AppData\Local\Temp
TMP	%USERPROFILE%\AppData\Local\Temp
	New Edit Delete
System variable	s
Variable	Value ^
OS	Windows NT
Path	C: \ProgramData \Orade \Java \javapath;
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;
PROCESSOR_	A AMD64
	New Edit Delete
	Edit System Variable
	Variable name: Path

In the above example, the path to add is as follows.

 $C: \label{eq:casio} C: \$ 

 $C: \label{eq:local_Android} \label{eq:local_Android} C: \label{eq:local_Android} \label{eq:local_Android} C: \label{eq:local_Android} \label{eq:local_Android} \label{eq:local_Android} C: \label{eq:local_Android} \label{eq:local_Android} C: \label{eq:local_Android} \label{eq:local_Android} C: \label{eq:local_Android} \label{eq:local_Android} \label{eq:local_Android} \label{eq:local_Android} C: \label{eq:local_Android} \label{eq:local_Android$ 

## 4.4 Debugging application

Select "Run" > "Debug 'app'" on Android Studio after you connected PC with DT-X400.



When the follow dialog is shown, select "CASIO COMPUTER CO., LTD. DT-X400 (Android 8.1.0, API 27)" from "Connected Devices" and press "OK".

🗯 Select Deployment Target	×
Connected Devices	
CASIO COMPUTER CO., LTD. DT-X400 (Android 8.1.0, API 27)	
Create New Virtual Device	
Ulse same selection for future launches	OK Cancel
Use same selection for future launches	UK Cancel

Start to debug an application on DT-X400.