

# StarPRNT Android SDK User's Manual

**Jun 29, 2018**

## **Abstract**

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This paper provides information about the StarPRNT Android SDK.

It provides guidelines for our customers to build the StarPRNT application.

## Version History

Release Date	Update
Aug 11, 2016	Release
Nov 18, 2016	Added the uploadData method to the AllReceipts class. Revised the description about onAccessoryConnectSuccess and onAccessoryConnectFailure methods. Added how to set the condition for printer busy when using BSC10 with USB interface.
Apr 17, 2017	Supports BlackMark and PageMode.
Sep 6, 2017	Added the API reference of class included in StarIO library. Added the StarBluetoothManagerFactory class. Added the API reference of the peripherals (barcode reader / customer display / scale).
Jan. 26, 2018	Added the appendHorizontalTabPosition method to the ICommandBuilder interface.
May 21, 2018	Added support for mC-Print2, mC-Print3. Added list of supported peripherals. Added list of printer configuration software. Added Ethernet to interfaces that support the portSettings 'l' option. Added the connectedInterface field to the StarPrinterStatus class. Added driveTime parameter and delayTime parameter to appendSound method of the ICommandBuilder interface. Added the appendTopMargin method to the ICommandBuilder interface. Added the appendPrintableArea method to the ICommandBuilder interface.
Jun 29, 2018	End of support for APS.

## About this Manual:

This manual is designed to help you understand StarPRNT SDK for Android application. It is important to understand the basics of the Java language.

Although this SDK is for Android, there are SDKs available for many different operating systems and programming languages at our Global Support Site.

Check the [Developers Section](#) of our site for the newest SDKs, technical documentation, FAQs, and many more additional resources.

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## 1 Getting Started

### 1.1 To build an Android project, Android Studio are needed.

These tools are available in one package from the [Android Studio – Official Site](#).

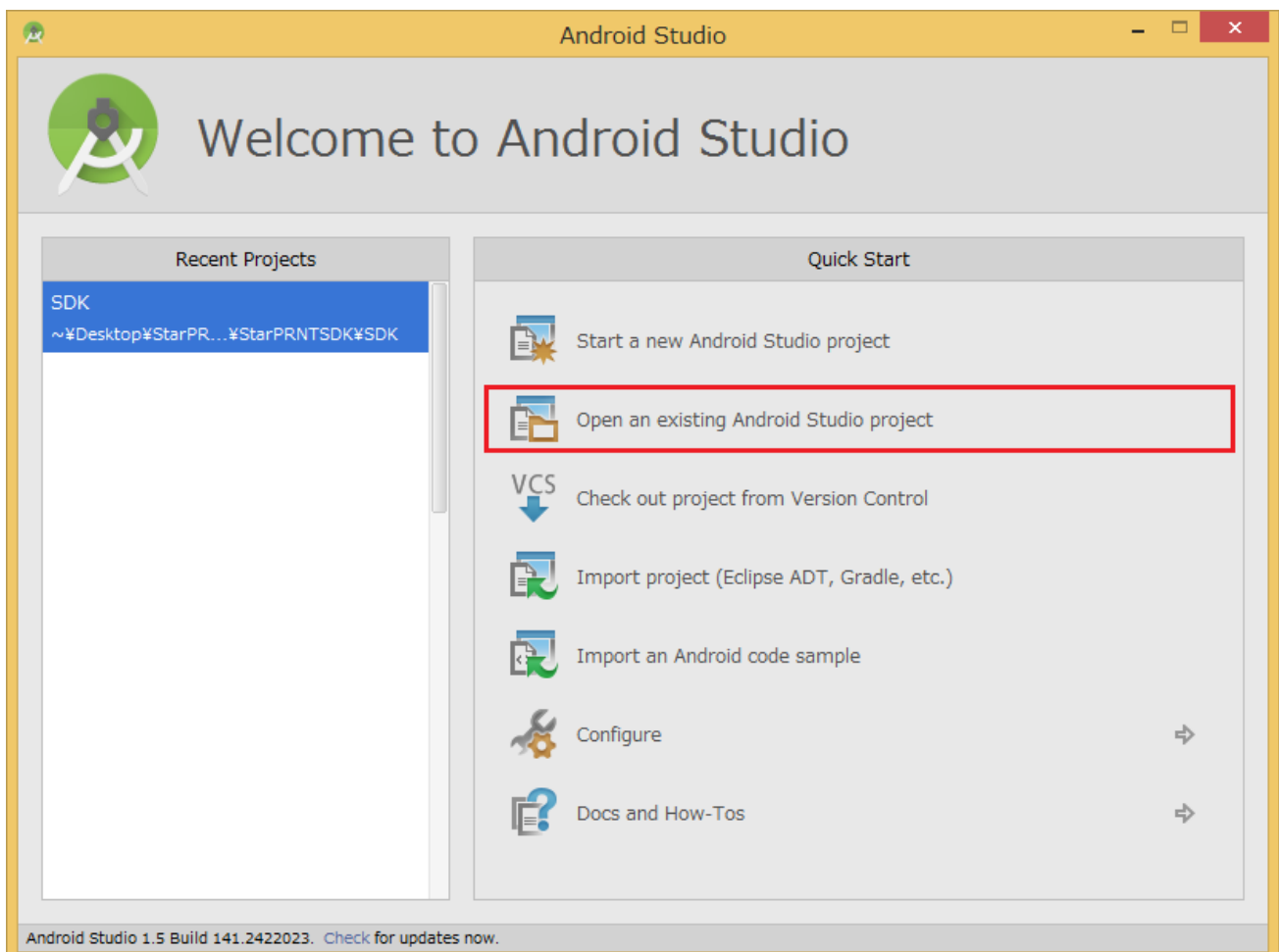
It is assumed Android Studio have already been installed on your PC at this point. Should you need assistance or additional information, visit the [Android Studio – Official Site](#).

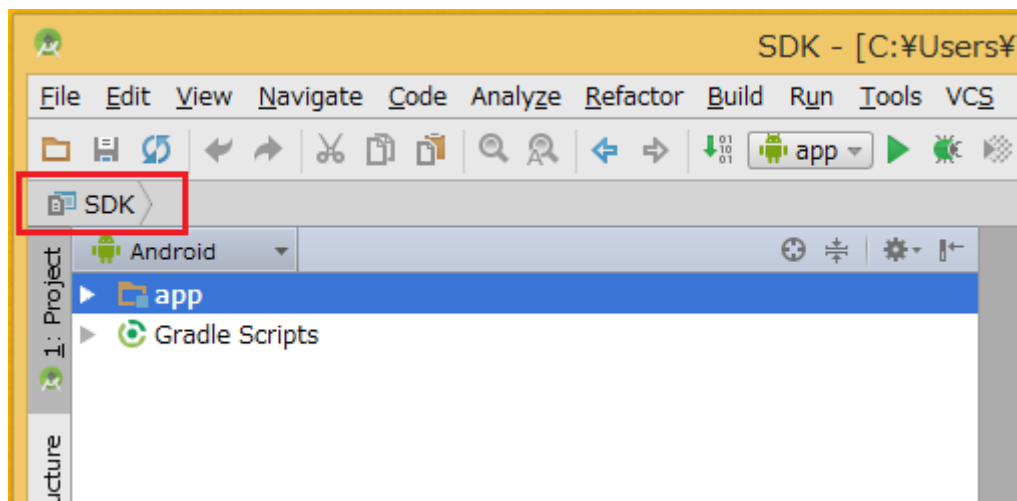
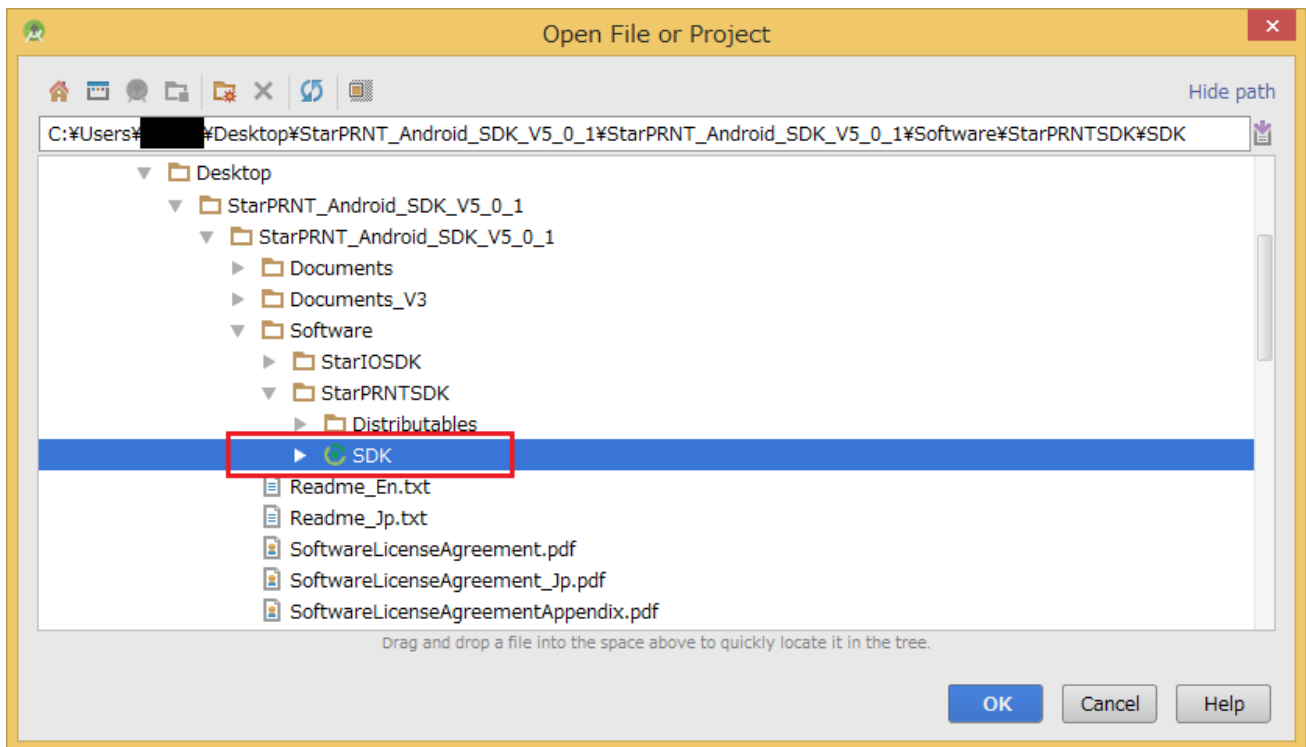
#### How to open the StarPRNT SDK project in Android Studio

1. Unzip the StarPRNT SDK package.



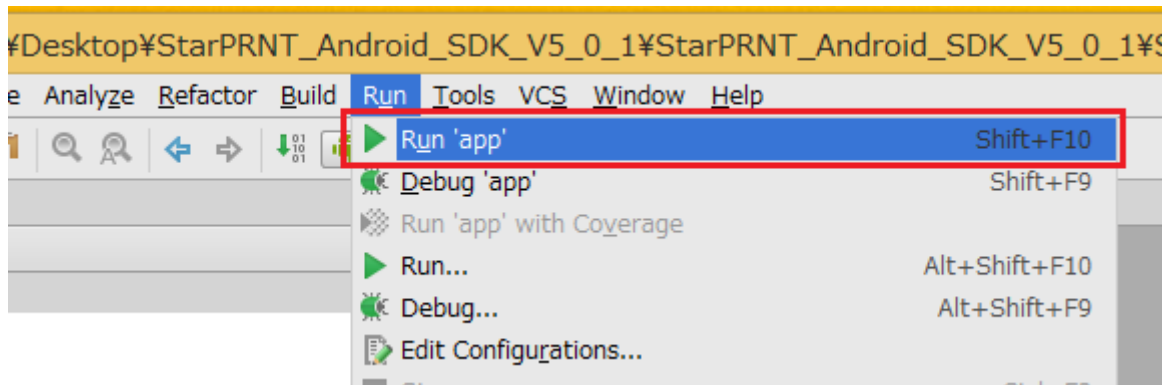
2. Execute Sndroid Studio and open StarPRNT SDK.



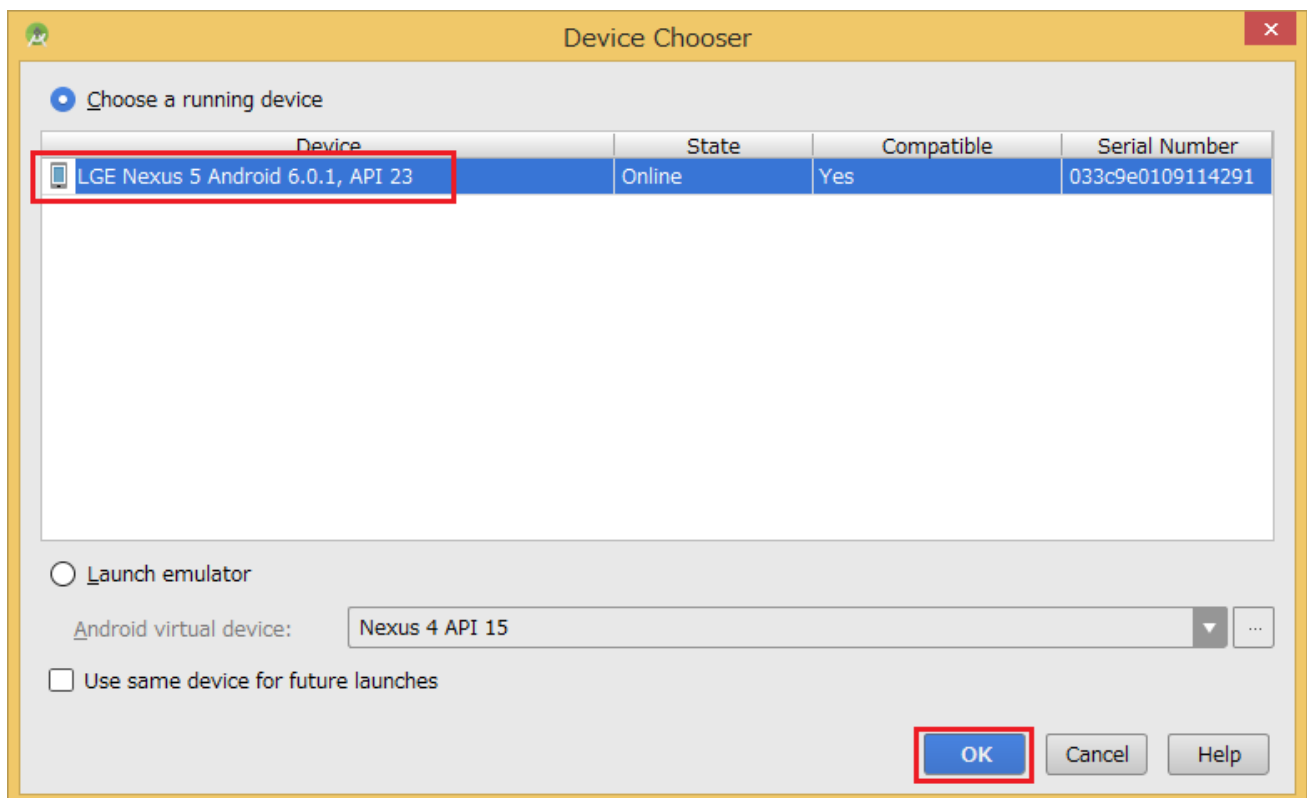


## Running the project

1. Click "Run" in the top menu bar and then select "Run 'app'".



2. Choose Device.



## 1.2 Printer

	Printer	F/W Version	Interface	Emulation
POS Printer	mC-Print2	1.0 or later	Bluetooth	StarPRNT
			Ethernet	
			USB	
	mC-Print3	1.0 or later	Bluetooth	StarPRNT
			Ethernet	
			USB	
	mPOP	1.0 or later	Bluetooth	StarPRNT
			USB	
	FVP10	1.2 or later	Bluetooth Ethernet USB	StarLine
	TSP100IIIW	1.0 or later	Wireless LAN	StarGraphic
	TSP100IIILAN	1.0 or later	Ethernet	StarGraphic
	TSP100IIIBI	1.0 or later	Bluetooth *2	StarGraphic
	TSP100IIIU	1.0 or later	USB	StarGraphic
	TSP100ECO	2.0 or later	USB	StarGraphic
	TSP100U	2.0 or later	USB	StarGraphic
	TSP100GT	2.0 or later	USB	StarGraphic
	TSP100LAN	2.0 or later	Ethernet	StarGraphic
	TSP650II	1.0 or later	Bluetooth *2 Ethernet USB	StarLine
	TSP700II	3.0 or later	Bluetooth *2 Ethernet USB	StarLine
	TSP800II	1.2 or later	Bluetooth *2 Ethernet USB	StarLine
	BSC10 LAN	1.0 or later	Ethernet	ESC/POS
	BSC10 *1	1.0 or later	USB	
	SP700	3.0 or later	Bluetooth (EU / USOnly) Ethernet USB	StarDotImpact

	Printer	F/W Version	Interface	Emulation
Mobile Printer	SM-S210i	2.4 or later	Bluetooth	StarPRNT *3 / EscPosMobile
	SM-S220i	2.0 or later	Bluetooth	StarPRNT *3 / EscPosMobile
	SM-S230i	1.0 or later	Bluetooth	StarPRNT / EscPosMobile
			USB	StarPRNT
	SM-T300i	2.4 or later	Bluetooth	StarPRNT *3 / EscPosMobile
	SM-T300	1.1 or later	Bluetooth	StarPRNT *3 / EscPosMobile
	SM-T400i	2.4 or later	Bluetooth	StarPRNT *3 / EscPosMobile
	SM-L200	1.0 or later	Bluetooth	StarPRNT / StarPRNTL *4
	SM-L300	1.0 or later	Bluetooth	StarPRNT / StarPRNTL

- \* 1: BSC10 setting with for USB I/F  
Please set busy condition to "Reception Buffer Full". (MSW #7, bit4 set to ON)
- \* 2: Support timeout value setting of data timeout function.  
TSP100IIIBI: Firmware version 1.0 or later.  
TSP650II, TSP800II: Firmware version 2.0 or later.  
TSP700II: Firmware version 5.0 or later.
- \* 3: Support for StarPRNT emulation is  
SM-S210i, SM-S220i, SM-T300i and SM-T400i: firmware version 3.0 or later.  
SM-T300(DB): firmware version 4.0 or later.
- \* 4: Support for StarPRNTL emulation is firmware version 2.0 or later.

### 1.3 Supported peripherals

The supported peripherals and models which can be used are the following.

Peripherals	Description
BCR-POP1	Barcode reader
SCD222U	Customer display

Peripherals	mC-Print2	mC-Print3	mPOP	FVP40	TSP100 (only TSP100IIIU)	TSP650II	TSP700II	TSP800II	SM-S210i	SM-S220i	SM-S230i	SM-T300i/T300	SM-T400i	BSC10	SM-S210i StarPRNT	SM-S220i StarPRNT	SM-S230i StarPRNT	SM-T300i/T300 StarPRNT	SM-T400i StarPRNT	SM-L200	SM-L300	SP700
BCR-POP1	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCD222U	✓	✓	✓	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- : Not guarantee.

## ❖ **Portable Printer**

### **When using StarPRNT emulation:**

To use the StarPRNT emulation, set the emulation setting of the printer to "StarPRNT". To change the emulation, proceed as follows. (For SM-L200 and SM-L300, it does not need to switch the emulation.)

### ◆ **Switching over between StarPRNT and ESC/POS emulation**

1. Turn the printer power and open the printer cover.
2. Press and hold the POWER button and the FEED button simultaneously. As soon as the ERROR lamp flashes five times, release the buttons. The emulation switchover takes place automatically.
3. After setting a paper, close the printer cover. The set emulation is printed out.  
ESC/POS : EMU = ESC/POS  
StarPRNT : EMU = StarPRNT

If the emulation is not switched correctly, repeat the above steps 1 to 3.

At that time, in step 2, make sure not to release the buttons until the lamp completes the 5th flash.

4. Please reboot the printer after switching the emulation. \*It will be valid after rebooting the printer.

## 1.4 Connecting a Star POS Printer to an Android Device

### Bluetooth

All Star Bluetooth devices have each initial device name as a factory default setting, such as "Star Micronics" and "DK-AirCash". When using multiple devices, which have same device name, it is useful to change the device name for identifying each device easily.

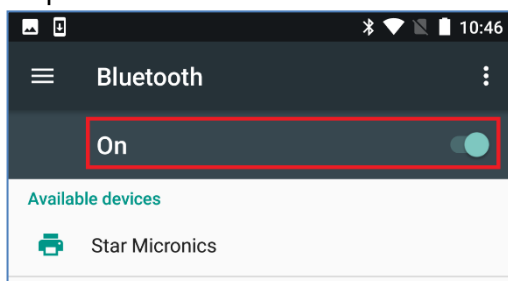
You can change the LAN/Bluetooth settings of the Star POS device, such as changing the Bluetooth device name. Please use the [Printer Configuration Software](#).

### - Pairing of a Star POS device with your Android Device

1. Ensure Bluetooth is enabled and the Star POS Device is powered on.

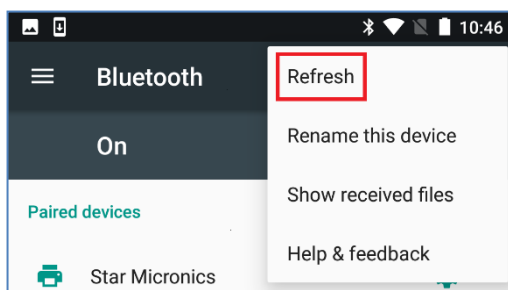
When the security setting of the Star POS device is set to SSP, press the PAIR button for more than 5 seconds to make it available for pairing.

2. Tap Settings.
3. Tap Bluetooth to ON.



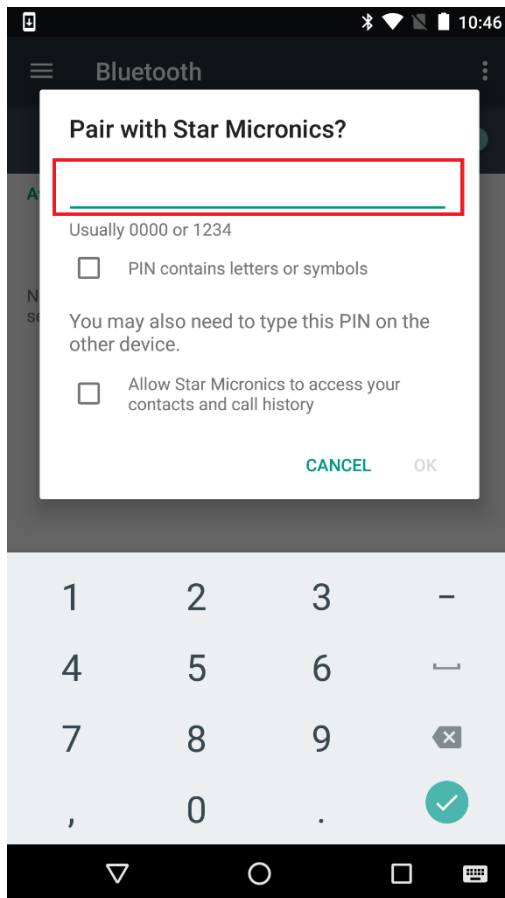
4. Tap Search for Devices.

Find the Star POS Device you wish to connect to and tap it to pair.





5. If use the "PIN Code", enter the PIN number. The factory default for standard Star POS Device is "1234". (If use the "SPP", do not need this operation.)



## Ethernet Interface

Assign an IP Address to the Star Printer and connect it to the network. Standard Star Printers do not ship with an IP Address pre-assigned; this can set by a DHCP network.

Use Star POS Printers with the #9100 Multi Session disabled. The setting can be confirmed by Test Print which can be executed by holding down the printer's feed button while turning the printer on.

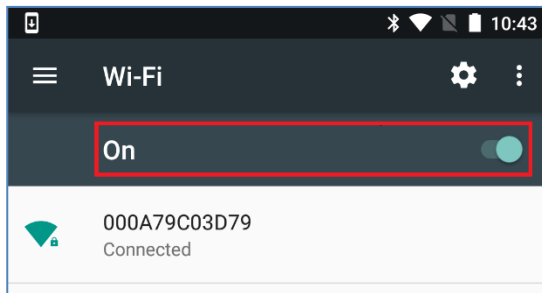
Refer to "guidelines-ethernet\_en.pdf" for how to confirm and change the #9100 Multi Session setting and how to set the Static IP Address.

You can set up your POS Printers which can connect to TCP/IP. Please use the [Printer Configuration Software](#).

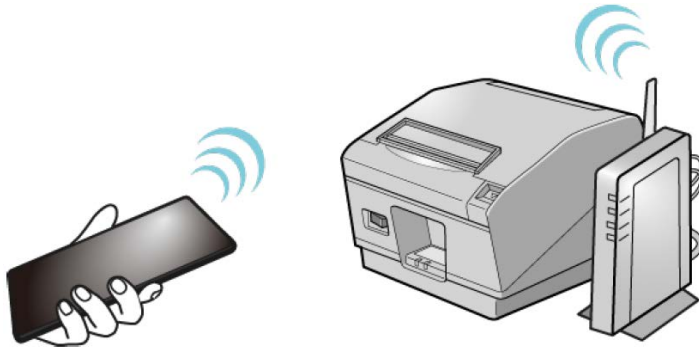
\* Star Setting Utility and TSP100III Utility do not support printers which are not assigned an IP Address. (IP Address: 0.0.0.0)

## Network Access Permission

1. Assign an IP Address to the Star POS Devices and connect it to the network.
2. Tap Settings.
3. Ensure Wi-Fi is ON.



4. Connect to the same network the Star POS Device is on.



## Wireless LAN Interface (TSP100IIIW)

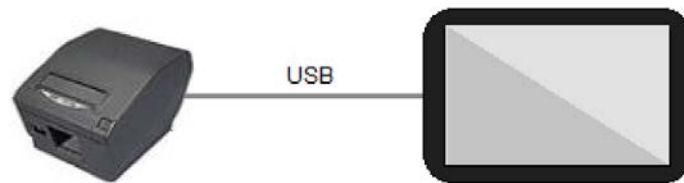
Connecting Tablet/PC

See the [Online manual \(Setup - Connect Tablet/PC\)](#).

For other points, refer to the item of Ethernet interface.

## USB Interface

1. No specific Star Micronics driver or printer software needs to be installed on the Android device.
2. The USB cable needed can vary by tablet. Most Android tablets do not support the common A to B USB cable. Some require mini/micro USB cables or adapters/docks. Review the specifications for your tablet to ensure the correct cable is being used; there is no specific pin out for Star USB Printers.
3. When connecting, multiple devices using a USB hub, the recommended cascade connection is maximum one stage.  
The maximum number of devices which can be connected at the same time is 4.



## USB Access Permission

Refer to “Edit AndroidManifest.xml” and “Edit device\_filter.xml”.

## 1.5 Printer Configuration Software

Use the software listed below to change the printer settings.

### For Android

Software	mC-Print2	mC-Print3	mPOP	FVP10	TSP100	TSP650II	TSP700II	TSP800II	SM-S210i	SM-S220i	SM-S230i	SM-T300i/T300	SM-T400i	BSC10	SM-S210i StarPRNT	SM-S220i StarPRNT	SM-S230i StarPRNT	SM-T300i/T300 StarPRNT	SM-T400i StarPRNT	SM-L200	SM-L300	SP700
Star Setting Utility * 1	-	-	-	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
mPOP Utility	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
mC-Print Utility	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TSP100III Utility	-	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Download software form [Google play](#).

- : Not guarantee.

\*1 : The memory switch setting cannot be changed.

To change the memory switch setting, use the software for Windows.

## For iOS

Software	mC-Print2	mC-Print3	mPOP	FVP10	TSP100	TSP650II	TSP700II	TSP800II	SM-S210i	SM-S220i	SM-S230i	SM-T300i/T300	SM-T400i	BSC10	SM-S210i StarPRNT	SM-S220i StarPRNT	SM-S230i StarPRNT	SM-T300i/T300 StarPRNT	SM-T400i StarPRNT	SM-L200	SM-L300	SP700
Star Setting Utility * 1	-	-	-	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
mPOP Utility	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
mC-Print Utility	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TSP100III Utility	-	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Download software from [App Store](#).

- : Not guarantee.

\*1 : The memory switch setting cannot be changed.

To change the memory switch setting, use the software for Windows.

## For Windows

Software	mC-Print2	mC-Print3	mPOP	FVP10	TSP100	TSP650II	TSP700II	TSP800II	SM-S210i	SM-S220i	SM-S230i	SM-T300/T300	SM-T400i	BSC10	SM-S210i StarPRNT	SM-S220i StarPRNT	SM-S230i StarPRNT	SM-T300/T300 StarPRNT	SM-T400i StarPRNT	SM-L200	SM-L300	SP700
StarPRNT Intelligence	-	-	-	✓	-	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	✓
StarPRNT Intelligence for mCollection	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
StarPRNT Intelligence for Portable	-	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	-
StarPRNT Intelligence for BSC10	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	-	-	-	-	-	-	-	-
Star TSP100 futurePRNT *1	-	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Download software from [here](#).

- : Not guarantee.

\*1 : The memory switch setting cannot be changed.

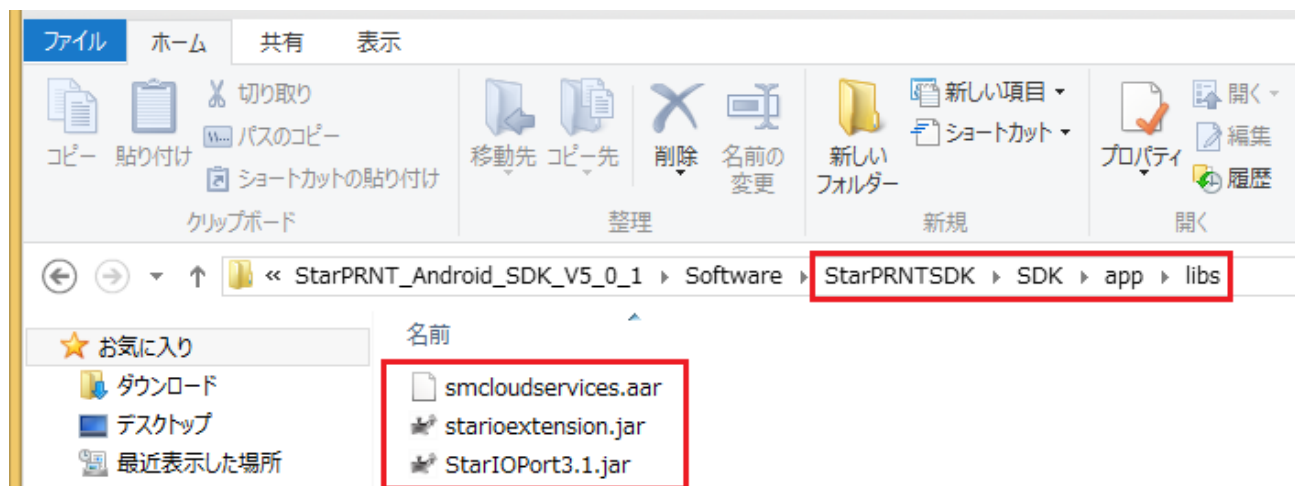
To change the memory switch setting, use the software for Android or iOS.

## 2 How to configuration StarPRNT Application

The Library (StarIOPort3.1.jar / starioextension.jar / smcloudservices.aar) is already included when the StarPRNT SDK is loaded; there's no need to include it again when testing our SDK. When you are building your own application, it is necessary to add the library into it.

### 2.1 Add library

1. Select the library in the libs folder of StarPRNT SDK.



-smcloudservices.aar-

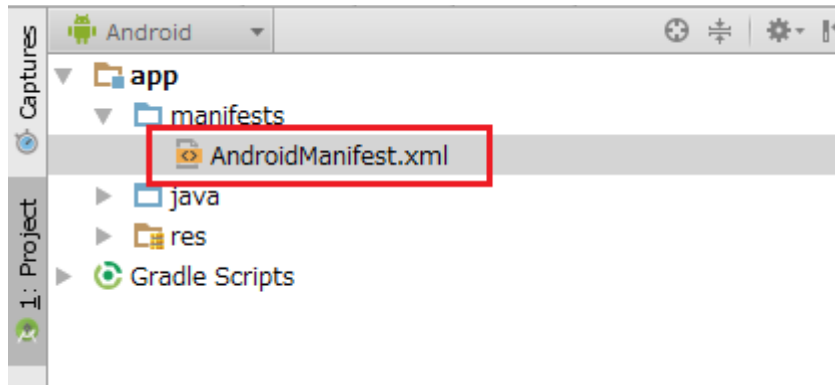
You need to add when using Star Micronics Cloud (AllReceipts, etc.) in the application.

2. Copy the library to the libs folder of project.



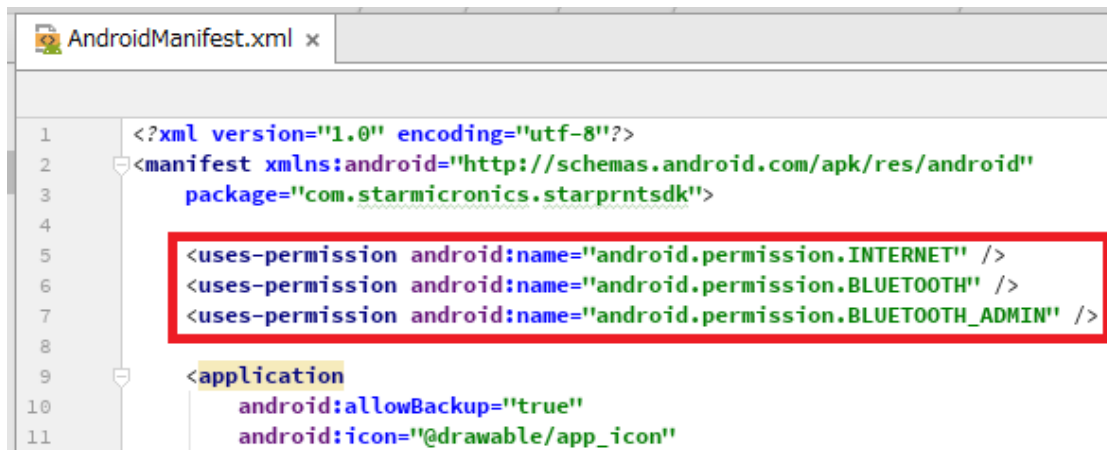
## 2.2 Edit AndroidManifest.xml

1. Double Click on the AndroidManifest.xml file.



2. In case of TCP/IP connection, add about use of TCP/IP connection.

In case of Bluetooth connection, add about use of Bluetooth connection.



```
<uses-permission android:name="android.permission.INTERNET" />
<uses-permission android:name="android.permission.BLUETOOTH" />
<uses-permission android:name="android.permission.BLUETOOTH_ADMIN" />
```



3. In case of USB connection, add about use of USB connection.

```

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14
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```

```

<activity
    android:name=".TitleActivity"
    android:theme="@style/TitleTheme"
    android:hardwareAccelerated="false"
    android:configChanges="orientation|screenSize"
    android:screenOrientation="portrait">

    <meta-data android:name="android.hardware.usb.action.USB_DEVICE_ATTACHED" android:resource="@xml/device_filter" />

    <intent-filter>
        <action android:name="android.intent.action.MAIN" />
        <category android:name="android.intent.category.LAUNCHER" />
        <action android:name="android.hardware.usb.action.USB_DEVICE_ATTACHED" />
    </intent-filter>
</activity>

```

```

<meta-data android:name="android.hardware.usb.action.USB_DEVICE_ATTACHED"
android:resource="@xml/device_filter" />

```

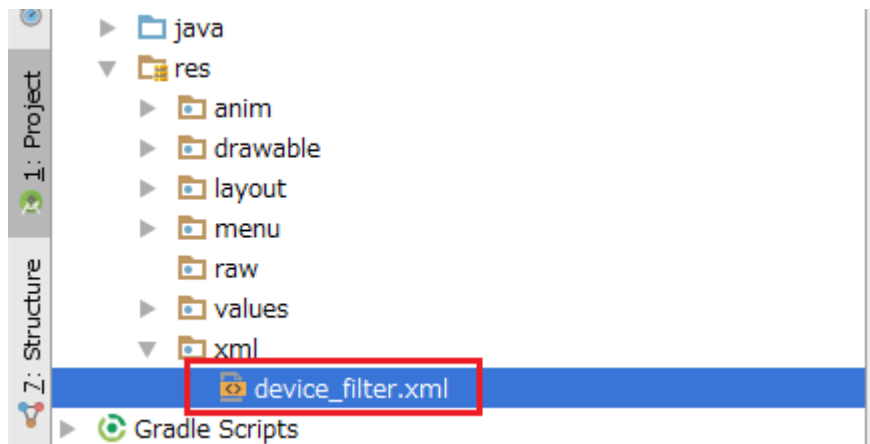
```

<action android:name="android.hardware.usb.action.USB_DEVICE_ATTACHED" />

```

## 2.3 Edit device\_filter.xml

1. Double Click on the device\_filter.xml file.



2. In case of USB connection, add about use of USB connection.



```
<usb-device class="255" subclass="66" protocol="1" />
<usb-device vendor-id="1305" product-id="****" />      <!-- Target printer -->
```

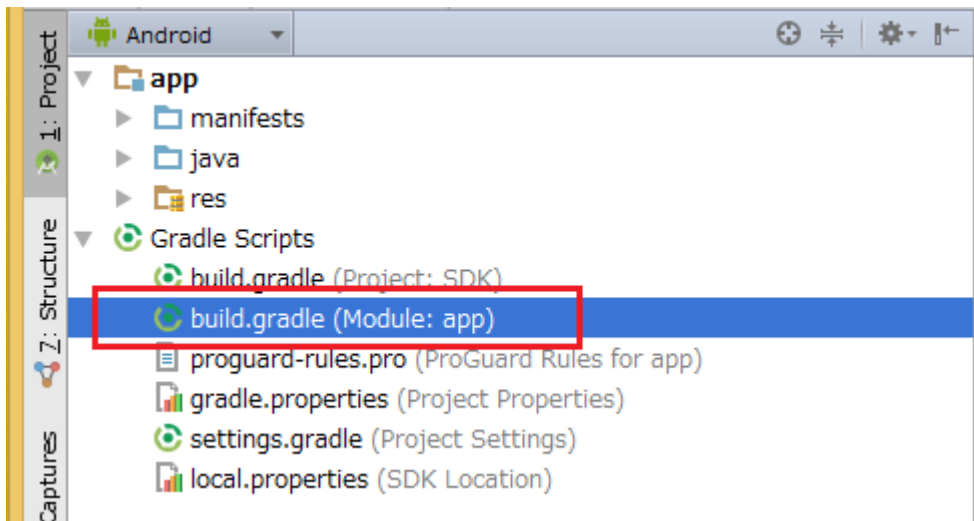
**Note 1:** About Star USB printers listed in device\_filter.xml.

If a user checks on the checkbox of connection permission dialog, then the dialog will not be displayed even if the cable is inserted or removed unless the application is reinstalled. In addition, the sample application will automatically launch when you insert the cable.

**Note 2:** TSP100IIIU can change product-id same as TSP100U/ECO or TSP100GT by memory switch setting. Memory switch setting can be done from [Printer Configuration Software](#).

## 2.4 Edit build.gradle (Module: app)

1. Double Click on the build.gradle (Module: app).



2. Add about use of the library.

```

21
22 dependencies {
23     compile files('libs/StarIOPort3.1.jar')
24     compile files('libs/starioextension.jar')
25     compile (name:'smcloudservices', ext:'aar')
26     compile 'com.android.support:appcompat-v7:23.4.0'
27     compile 'com.android.support:support-v4:23.4.0'
28     compile 'com.google.zxing:core:3.2.1'
29 }

```

```

compile files('libs/StarIOPort3.1.jar')
compile files('libs/starioextension.jar')

```

3. When printing of QR code / PDF417 on TSP100 series, add about use of the library.

```

22 dependencies {
23     compile files('libs/StarIOPort3.1.jar')
24     compile files('libs/starioextension.jar')
25     compile (name:'smcloudservices', ext:'aar')
26     compile 'com.android.support:appcompat-v7:23.4.0'
27     compile 'com.android.support:support-v4:23.4.0'
28     compile 'com.google.zxing:core:3.2.1'
29 }

```

```
compile 'com.google.zxing:core:3.2.1'
```

4. When using Star Micronics Cloud (AllReceipts, etc.) in the application, add about use of the library. In addition, when printing the AllReceipts QR code with TSP100 series printers, add about use of the library that generates QR codes.

```

22 dependencies {
23     compile files('libs/StarIOPort3.1.jar')
24     compile files('libs/starioextension.jar')
25     compile (name:'smcloudservices', ext:'aar')
26     compile 'com.android.support:appcompat-v7:23.4.0'
27     compile 'com.android.support:support-v4:23.4.0'
28     compile 'com.google.zxing:core:3.2.1'
29 }

```

```
compile (name:'smcloudservices', ext:'aar')
```

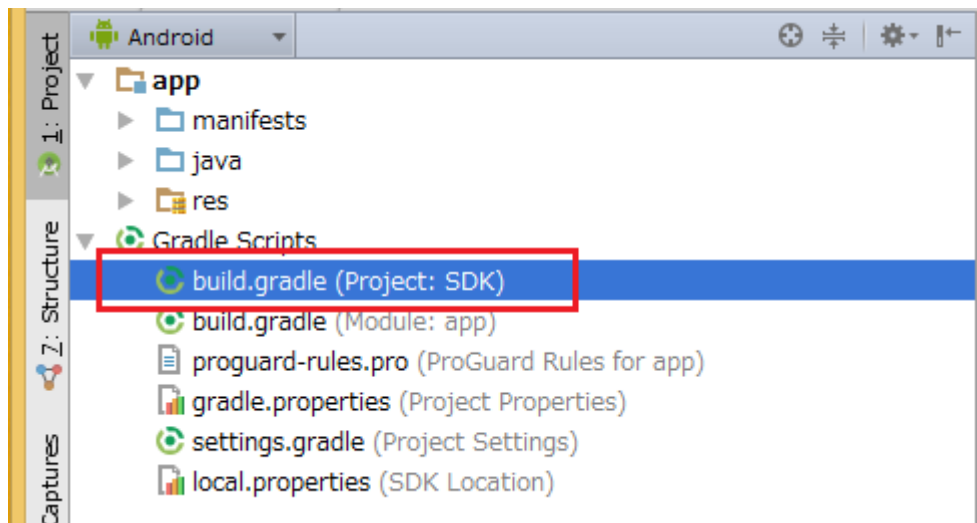
```
compile 'com.android.support:support-v4:23.4.0'
```

Printing the AllReceipts QR codes with TSP100 series printers

```
compile 'com.google.zxing:core:3.2.1'
```

## 2.5 Edit build.gradle (Project: SDK)

1. Double Click on the build.gradle (Project: SDK).



2. When using Star Micronics Cloud (AllReceipts, etc.) in the application, add about use of the library.

```

15 allprojects {
16     repositories {
17         jcenter()
18         flatDir{
19             dirs 'libs'
20         }
21     }
22 }

```

```

flatDir{
    dirs 'libs'
}

```

### 3 StarIOPort class (StarIOPort3.1.jar)

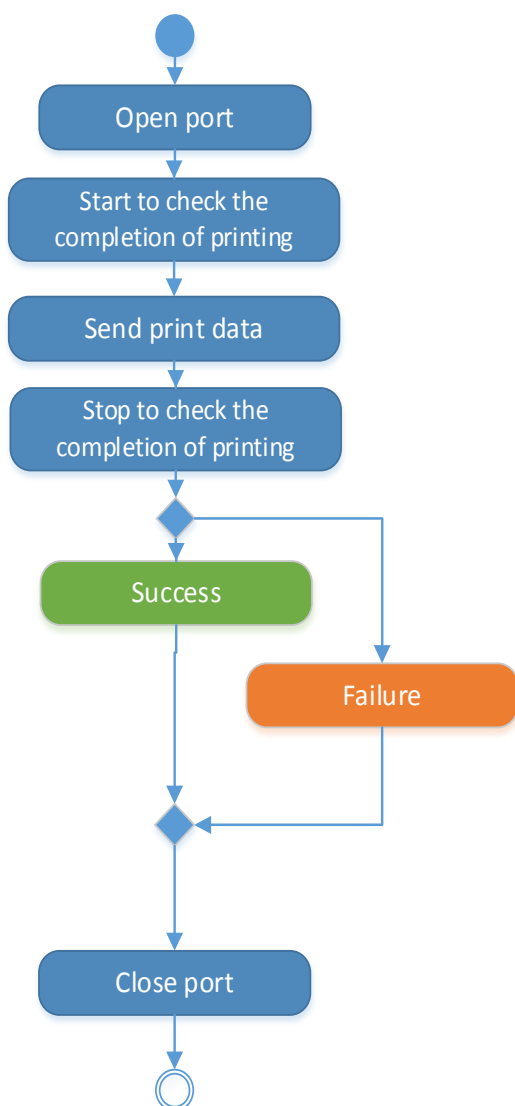
A StarIOPort class is the class to communicate with a printer.

#### *Method*

Name	Description
<a href="#">getPort</a>	Creates a StarIOPort object and opens a port for communicating with the printer.
<a href="#">releasePort</a>	Creates a StarIOPort object and closes a port for communicating with the printer.
<a href="#">searchPrinter</a>	Search for printers that can connect to Android devices.
<a href="#">writePort</a>	Write data to the printer.
<a href="#">readPort</a>	Read data from the printer.
<a href="#">retrievStatus</a>	Get printer status.
<a href="#">beginCheckedBlock</a>	Starts to check completion of printing
<a href="#">endCheckedBlock</a>	Terminates to check completion of printing
<a href="#">setEndCheckedBlockTimeoutMillis</a>	Set the timeout value for starting to check completion of printing.
<a href="#">getFirmwareInformation</a>	Gets printer model name and firmware version
<a href="#">getPortName</a>	Get the portName when the port is opened.
<a href="#">getPortSettings</a>	Get the portSettings when the port is opened.
<a href="#">getStarIOVersion</a>	Get the version number of the StarIO library.

### 3.1 Printing flow using a StarIOPort class

Using the StarIOPort class, print per the following procedure.



```

StarIOPort port = null;

try {
    // Port open
    port = StarIOPort.getPort(portName, portSettings, 10000, context);

    // Print end monitoring -Start
    StarPrinterStatus status = port.beginCheckedBlock();

    byte[] command =
    PrinterFunctions.createTextReceiptData(emulation,
    localizeReceipts, false);

    // Send print data
    port.writePort(command, 0, command.length);

    // Print end monitoring -Endt
    status = port.endCheckedBlock();

    // Status judgment during printing completion monitoring
    if (status.offline == false) {
        // Print successful end (Printer OnLine)
    }
    else {
        // Printing is abnormal termination (no paper, printer cover
        open etc)
        // Notify user
    }
}
catch (StarIOPortException e) {
    // Error
}
finally {
    try {
        // Port close
        StarIOPort.releasePort(port);
    }
    catch (StarIOPortException e) {}
}

```

Refer to Communication.java.

### 3.2 Model: StarIOPort class

Supported method for each model.

Method	mC-Print2	mC-Print3	mPOP	FVP10	TSP100	TSP650II	TSP700II	TSP800II	SM-S210i	SM-S220i	SM-S230i	SM-T300i/T300	SM-T400i	BSC10	SM-S210i StarPRNT	SM-S220i StarPRNT	SM-S230i StarPRNT	SM-T300i/T300 StarPRNT	SM-T400i StarPRNT	SM-L200	SM-L300	SP700
getPort	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
releasePort	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
searchPrinter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
writePort	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
readPort	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
retrieveStatus	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
beginCheckedBlock	✓	✓	✓	✓	✓	✓	*1	✓	✓	*3	✓	*3	✓	✓	✓	✓	✓	✓	✓	✓	✓	*1
endCheckedBlock	✓	✓	✓	✓	✓	✓	*1	✓	✓	*3	✓	*3	✓	✓	✓	✓	✓	✓	✓	✓	✓	*1
setEndCheckedBlockTimeoutMillis	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
getFirmwareInformation	✓	✓	✓	*4	*2 *4	*4	*4	*4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	*4
getPortName	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
getPortSetting	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
getStarIOVersion	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

-: ignored

\*1: Firmware version 3.0 or later is required

\*2: The model name of TSP100IIIU, TSP100U, TSP100GT and TSP100ECO is TSP100.

It is impossible to get the firmware version of TSP100U, TSP100GT, TSP100ECO and TSP100LAN.

\*3: When using SM-S200i with firmware Ver 2.1 or earlier, the following limitation exists.

When using SM-T300 with firmware Ver 2.4 or earlier, the following limitation exists.

You can confirm the completion of transmission of print data but cannot confirm the completion of printing.

\*4: When using Apple AirMac Express with a USB printer, it returns an empty string.



### 3.3 getPort Method

Creates a StarIOPort object and opens a port for communicating with the printer.

#### Declaration

```
public static StarIOPort getPort(String portName, String portSettings, int ioTimeoutMillis, Context context) throws StarIOPortException;
```

#### @Deprecated

```
public static StarIOPort getPort(String portName, String portSettings, int ioTimeoutMillis) throws StarIOPortException;
```

#### Parameter

Name	Description	Object type
portName	Acquires the printer port name.	String
portSettings	Specifies connection setting information. • Emulation type • Retry • Data timeout	String
ioTimeoutMillis	Acquires and specifies the timeout time for internal control and API. (unit: millisecond)	int
context	Context	android.content.Context

#### Return value

Description	Object type
StarIOPort Object	com.starmicronics.stario.StarIOPort

#### Exception

Description	Object type
When port open fails. When an incorrect portName is passed.	com.starmicronics.stario. .StarIOPortException

Refer to [the printing process flow using a StarIOPort class](#).

#### 1. portName Parameter

Interface	portName	Description	Example
Bluetooth	BT:	Communicates with the first Star printer found. Pair only one Star printer.	BT:
	BT: Device Name	To specify the Bluetooth device name	BT:Star Micronics
	BT: MAC address	To specify the MAC address in Bluetooth	BT:00:12:F3:1E:2B:72
Ethernet/ Wireless LAN	TCP:IP address	To specify the IP address	TCP:192.168.1.130
USB	USB:	Communicates with the first Star printer found. Connect only one Star USB printer with .	USB:
	USB:SN: Serial Number	To specify the USB printer that is enabled a serial number.	USB:SN:1234ABCD
	USB: search result	PortName obtained by searching with the searchPrinter method. It can be obtained by getPortName method of PortInfo class.	USB:1-3

## 2. portSettings Parameter

The portSettings string is specified using the format shown below.

- The identifier that should be used with that model + option specification strings delimited by " , "

The identifier that should be used with each model is as shown below.

Model	Identifier
mC-Print2	""
mC-Print3	""
mPOP	""
FVP10	""
TSP100	""
TSP650II	""
TSP700II	""
TSP800II	""
SM-S210i	"mini"
SM-S220i	"mini"
SM-S230i	"mini"
SM-T300i/T300	"mini"
SM-T400i	"mini"
BSC10	"escpos"
SM-S210i StarPRNT	"Portable"
SM-S220i StarPRNT	"Portable"
SM-S230i StarPRNT	"Portable"
SM-T300i/T300 StarPRNT	"Portable"
SM-T400i StarPRNT	"Portable"
SM-L200	"Portable"
SM-L300	"Portable"
SP700	""

The option specification strings are shown below.

Interface	Option type	Connection options
Bluetooth	"l[value]" (lower case "L") Ex: "l10000"	<p>Connection retry will be performed. The method for specifying the retry time is the following.</p> <p>(1) If a value will not be specified ("l" only) : Timeout time specified by the getPort method</p> <p>(2) If a value from 0 to 300000 was specified for [value] : Time that was specified for [value] (units: milliseconds)</p> <p>(3) If a value of 300001 or more was specified for [value] : Timeout time specified by the getPort method</p> <p>(4) Other than the above : Retry is not performed.</p>
	"d[value]" Ex: "d10"	<p>Data timeout function timeout value setting. For usable models, refer to <a href="#">StarIOPort class</a>.</p> <p>The data timeout function is a function which ignores the remaining print data when data was not sent to the printer within the specified length of time during printing. This function prevents corruption of the next print contents after the Bluetooth connection was disconnected during data sending.</p> <p>The method for specifying the timeout time is the following.</p> <p>(1) If a value from 1 to 255 was specified for [value] : Time that was specified for [value] (units: seconds)</p> <p>(2) If 0 was specified for [value] : Data timeout function is ignored.</p> <p>(3) Other than the above : 3 seconds</p> <p>If the d option is not specified with a model that supports the data timeout function, the data timeout function is enabled and the timeout value is set to 3 seconds.</p>
Ethernet/ Wireless LAN	"l[value]" (lower case "L") Ex: "l10000"	<p>Connection retry will be performed when the target printer is in use by another host. The method for specifying the retry time is the following.</p> <p>(1) If a value will not be specified ("l" only) : Timeout time specified by the getPort method</p> <p>(2) If a value from 0 to 300000 was specified for [value] : Time that was specified for [value] (units: milliseconds)</p> <p>(3) If a value of 300001 or more was specified for [value] : Timeout time specified by the getPort method</p> <p>(4) Other than the above : Retry is not performed.</p>
	"[Port number]" Ex: "9100"	Port number(Only when using AirPort)

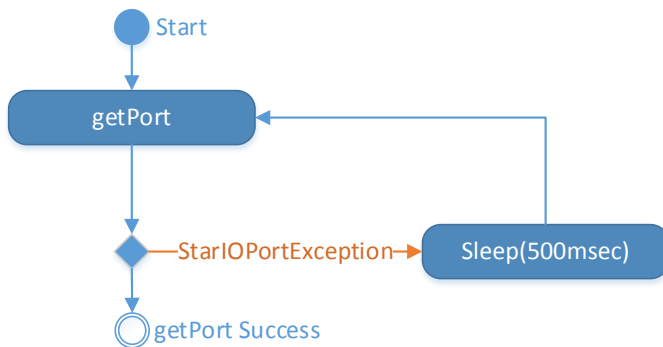
## Example of portSettings

Printer connection environment	portSettings
Uses TSP650II as the default setting.	""
Uses mC-Print3 with retry enabled by Ethernet interface.	";l10000"
Uses SM-L200 with retry enabled by Bluetooth interface.	"Portable;l10000"
If data is not sent for 10 seconds during printing with TSP650II, it operates the data canceling function.	";d10"

### 3. getPort Retry Flow

In case your application prints to bluetooth printers, the getPort method may sometimes fail to get status or print as the result of failing to connect with the bluetooth device depending on devices and a use environment.

When getPort fails a StarIOPortException is thrown. Please repeat the operations mentioned in article II and III below.



I. getPort fails  
(StarIOPortException is thrown).

II. Wait for certain time (e.g. 500ms)

III. Execute getPort again

IV. When getPort is successful, go to procedures such as printing or getting status.

\* The number of attempts to execute getPort to obtain a port handle depends on the Host device(Android Device). Some devices have a higher failure rate than others, and may require additional attempts to getPort. Please decide based on tests conducted with your Android device.

### 4. ioTimeoutMillis Parameter

timeout is a ioTimeoutMillis timeout controlled internally and is used for communication in the APIs. This parameter guarantees that all of the below APIs will complete in a bounded amount of time, but does NOT guarantee the exact timeout length.

### 5. Use share printer function with Apple AirPort Express

Set AirPort Express IP Address for **portName**.

*Ex. TCP:192.168.1.2*

Set port number for **portSettings**.

Increase the port number in sequential order from 9100 to 9109 until communication is successful.

*Ex. 9100*

### 3.4 releasePort Method

Discards the StarIOPort object and closes the port for communication with the printer.

#### *Declaration*

```
public static void releasePort(StarIOPort port);
```

#### *Parameter*

Name	Description	Object type
port	A StarIOPort object previously created by the getPort method	com.starmicronics.stario.StarIOPort

#### *Return value*

Description	Object type
-	-

Refer to [the printing process flow using a StarIOPort class.](#)

#### 1. Notes

When do not send the data, release (close) ports.

Leaving a port open will cause future calls to open the port to fail.

#### 2. For Ethernet Interface:

The getPort method may fail if you run it just after running releasePort.

You must run the getPort method after 500msec from releasePort.

### 3.5 searchPrinter Method

Search the Star printer and return search results in ArrayList <PortInfo>.

#### Declaration

```
public static ArrayList<PortInfo> searchPrinter(String target, Context context) throws
StarIOPortException;
public static ArrayList<PortInfo> searchPrinter(String target) throws StarIOPortException;
```

#### Parameter

Name	Description	Object type
target	Specify the interface type of the Star printer to be searched.	com.starmicronics.stario. StarIOPort
	Bluetooth I/F	
	Ethernet / Wireless LAN I/F	
	USB I/F	
context	context Required when specifying "USB:" for target.	android.content.Context

#### Return value

Description	Object type
Search result of Star printer Refer to <a href="#">PortInfo class</a> .	ArrayList<com.starmicronics.stario.PortInfo>

#### Exception

Description	Object type
When port open fails. When an incorrect target is passed.	com.starmicronics.stario.StarIOPortException

1. When reconnecting the USB printer  
When reconnecting the USB printer, re-execute the searchPrinter method and get the latest printer information.
2. Restrictions  
This API do not guarantee the discovery of devices.
3. In Android 7.0 or higher, portName which is got by searchPrinter method, (for example, USB:1-3) has some limitations. It changes everytime the USB printer is connected. Set portName to "USB:" to use only one printer and "USB:SN:serial number" to use multiple printers.

#### Example

```
try {
    //Searches for an Ethernet / Wireless LAN interface Star printer on the same network.
    List<PortInfo> portList = StarIOPort.searchPrinter("TCP:");

    for (PortInfo port : portList) {
        Log.i ("LOG", "Port Name: " + port.getPortName());
        Log.i ("LOG", "MAC Address: " + port.getMacAddress());
        Log.i ("LOG", "Model Name: " + port.getModelName());
    }
}
catch (StarIOPortException e) {
    // Error
}
```

Refer to SearchPortFragment.java.

### 3.6 writePort Method

Write data to the printer.

#### *Declaration*

public void writePort(byte[] writeBuffer, int offset, int size) throws StarIOPortException;

#### *Parameter*

Name	Description	Object type
writeBuffer	Contains the output data in a byte array.	byte[]
offset	Specifies where to begin pulling data from writeBuffer.	int
size	Number of bytes to write.	int

#### *Return value*

Description	Object type
-	-

#### *Exception*

Description	Object type
when a communication failure occurs	com.starmicronics.stario.StarIOPortException

Refer to [the printing process flow using a StarIOPort class.](#)



### 3.7 readPort Method

Read data from the printer. Please use it only when it is necessary to read Raw byte from the printer.

#### *Declaration*

public int readPort(byte[] readBuffer, int offset, int size) throws StarIOPortException;

#### *Parameter*

Name	Description	Object type
readBuffer	A Byte Array buffer into which data is read.	byte[]
offset	specifies where to begin writing data into the readBuffer	int
size	Total number of bytes to read.	int

#### *Return value*

Description	Object type
The number of bytes that were read. Under some interface types, this function will succeed even when no data was read in. Your application should call this function a limited number of times until the expected data has been read in or until an application determined retry threshold has been reached.	int

#### *Exception*

Description	Object type
when a communication failure occurs	com.starmicronics.stario.StarIOPortException

#### 1. Restrictions

Do not use this method to read raw status. Use retrieveStatus for getting status.

### 3.8 retrieveStatus Method

Get printer status.

#### Declaration

public StarPrinterStatus retrieveStatus() throws StarIOPortException;

#### Parameter

Name	Description	Object type
-	-	-

#### Return value

Description	Object type
Current device status Refer to <a href="#">StarPrinterStatus class</a> .	com.starmicronics.stario.StarPrinterStatus

#### Exception

Description	Object type
when a communication failure occurs	com.starmicronics.stario.StarIOPortException

#### Example

**StarPrinterStatus status = port.retrieveStatus();**

```
if (status.offline == false) {
    // Printer OnLine
    if (status.blackMarkError == true) {
        // BlackMark Error
    }
    if (status.compulsionSwitch == true) {
        // Cashdrawer Open
    }
    else {
        // Cashdrawer Close
    }
}
else {
    // Printer Offline
}
```

Refer to *Communication.java*.

### 3.9 beginCheckedBlock Method

This method is used in combination with endCheckedBlock and checks the completion of printing. To check if the whole data is completely printed, you need to run this method just before sending print data and endCheckedBlock just after sending print data.

#### Declaration

public StarPrinterStatus beginCheckedBlock() throws StarIOPortException;

#### Parameter

Name	Description	Object type
-	-	-

#### Return value

Description	Object type
Current printer status For the types of status that can be acquired, refer to <a href="#">StarPrinterStatus class</a> .	com.starmicronics.stario.StarPrinterStatus

#### Exception

Description	Object type
when a communication failure occurs when the printer is off line	com.starmicronics.stario.StarIOPortException

Refer to [the printing process flow using a StarIOPort class](#) about the procedure of the print end monitoring process by beginCheckedBlock / endCheckedBlock.

### 3.10 endCheckedBlock Method

This method is used together with the beginCheckedBlock method as a pair.

This method monitors printer status and when the transferred data is printed completely, it returns control to the application.

If this method is used with other data other than print data(ex. retrieveStatus ), once that data is processed by the printer, this method returns control to the application.

#### Declaration

public StarPrinterStatus endCheckedBlock() throws StarIOException;

#### Parameter

Name	Description	Object type
-	-	-

#### Return value

Description	Object type
Current printer status For the types of status that can be acquired, refer to <a href="#">StarPrinterStatus class</a> .	com.starmicronics.stario.StarPrinterStatus

#### Exception

Description	Object type
when a communication failure occurs No response for the completion of printing from a printer within the timeout	com.starmicronics.stario.StarIOException

Refer to [the printing process flow using a StarIOPort class](#) about the procedure of the print end monitoring process by beginCheckedBlock / endCheckedBlock.

### 3.11 setEndCheckedBlockTimeoutMillis Method

This method sets the endCheckedBlock method's timeout value [unit: ms]

If it takes a long time to print, please increase this value to allow for enough time to complete the print job.

#### *Declaration*

```
public void setEndCheckedBlockTimeoutMillis(int endCheckedBlockTimeoutMillis);
```

#### *Parameter*

Name	Description	Object type
endCheckedBlockTimeoutMillis	Sets the endCheckedBlock method's timeout value [unit: ms]	int

#### *Return value*

Description	Object type
-	-

#### 1. endCheckedBlockTimeoutMillis parameter

Default value of endCheckedBlock method timeout value is the timeout value designated by getPort method.

Timeout length is 10 seconds if specified less than 10 seconds.

When [Data timeout function setting] is used in the portSetting parameter of the getPort method, it should be at least 3 seconds longer than the time specified for the data timeout function. If it is set to less than 3 seconds, it will be controlled internally to be 3 seconds longer automatically.

### 3.12 getFirmwareInformation Method

This method gets a model name and firmware version of the printer.

#### Declaration

public Map<String, String> getFirmwareInformation() throws StarIOPortException;

#### Parameter

Name	Description	Object type
-	-	-

#### Return value

Description	Object type
The Map object of the firmware information acquisition result The return value can get the model name by setting the Map object key of the return value to "ModelName" and get the firmware version by setting "FirmwareVersion".	Map

#### Exception

Description	Object type
when a communication failure occurs	com.starmicronics.stario.StarIOPortException

#### Example

```
try {
    Map<String, String> firmwareInformationMap = port.getFirmwareInformation();

    Log.i ("LOG", "Model Name: " + firmwareInformationMap.get("ModelName"));
    Log.i ("LOG", "Firmware Version: " + firmwareInformationMap.get("FirmwareVersion"));
}
catch (StarIOPortException e) {
    // Error
}
```

Refer to DeviceStatusFragment.java and Communication.java.

### 3.13 getPortName Method

Get the portName when the port is opened.

#### Declaration

public String getPortName();

#### Parameter

Name	Description	Object type
-	-	-

#### Return value

Description	Object type
The portName parameter passed to the getPort method.	String

### 3.14 getPortSettings Method

Get the portSettings when the port is opened.

#### *Declaration*

```
public String getPortSettings();
```

#### *Parameter*

Name	Description	Object type
-	-	-

#### *Return value*

Description	Object type
The portSettings parameter passed to the getPort method.	String

### 3.15 getStarIOVersion Method

Get the version number of the StarIO library.

#### *Declaration*

```
public String getStarIOVersion();
```

#### *Parameter*

Name	Description	Object type
-	-	-

#### *Return value*

Description	Object type
StarIO library version	String

## 4 StarPrinterStatus class (StarIOPort3.1.jar)

Class to hold the printer status.

Holds the printer status in both the boolean datatype and binary (raw field) formats.

For status types that can be acquired, refer to the field list.

### Field

Member name	Contents	Type	Detail
<b>blackMarkError</b>	Black Mark Error	boolean	" true " : Black mark error occurs. " false " : Black mark error does not occur. When you set printer to Black mark, and print to not Black mark paper, this error occurs.
<b>compulsionSwitch</b>	Compulsion SW	boolean	You can check status of Cash Drawer (Open or Close) " true " : Compulsion SW is pressed. " false " : Compulsion SW is not pressed.
<b>coverOpen</b>	Cover Status	boolean	You can check status of Cover " true " : Cover is opened. " false " : Cover is closed.
<b>cutterError</b>	Auto-cutter Error	boolean	You can check status of Cutter " true " : Cutter error occurs. " false " : Cutter error does not occur.
<b>etbAvailable</b>	ETB available or not	boolean	" true " : available to use " false " : not available to use
<b>etbCounter</b>	ETB Counter	int	You can get current value of ETB
<b>headThermistorError</b>	Head Thermistor Error	boolean	You can check status of Head Thermistor. " true " : Head thermistor detects an abnormal value. " false " : Head thermistor does not detect an abnormal value.
<b>offline</b>	ONLINE/OFFLINE Status	boolean	You can check status of Online or offline. " true " : Printer is Offline. " false " : Printer is Online
<b>overTemp</b>	Stopped by high head temperature	boolean	" true " : Printer is stopped by head temperature. " false " : Printer is not stopped by head temperature.
<b>raw</b>	Byte column of status	byte[]	Byte column of status (example : HEX 23 86 00 00 00 00 00 00 00)
<b>rawLength</b>	raw length	int	raw length
<b>receiptPaperEmpty</b>	Paper end	boolean	" true " : Paper end. " false " : Paper does not end.



<b>receiptPaperNearEmptyInner</b>	Paper Near-end (Inner Side)	boolean	" true " : Paper near-end. " false " : Paper does not near-end.
<b>receiveBufferOverflow</b>	Receive Buffer Overflow	boolean	You can check status of received Buffer. " true " : Received buffer is full. " false " : Received buffer is not full.
<b>unrecoverableError</b>	Non-recoverable Error	boolean	" true " : Unrecoverable error occurs. " false " : Unrecoverable error does not occur.  Unrecoverable error : Head Thermistor Error, Auto-cutter Error, Electric Voltage Error and etc.)
<b>voltageError</b>	Electric Voltage Error	boolean	" true " : Printers detects an abnormal power supply voltage. " false " : Printers does not detect an abnormal power supply voltage.
<b>connectedInterface</b>	Type of interface that is currently connected	int	You can check type of interface that is currently connected. 0: USB-B 1: USB-A 2: Bluetooth 3: Ethernet

## 4.1 Model: StarPrinterStatus class

Supported field for each model.

Field	mC-Print2	mC-Print3	mPOP	FVP10	TSP100	TSP650II	TSP700II	TSP800II	SM-S210i	SM-S220i	SM-S230i	SM-T300i/T300	SM-T400i	BSC10	SM-S210i StarPRNT	SM-S220i StarPRNT	SM-S230i StarPRNT	SM-T300i/T300 StarPRNT	SM-T400i StarPRNT	SM-L200	SM-L300	SP700
blackMarkError	-	-	-	✓	-	-	✓	✓	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓
compulsionSwitch	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	✓	-	-	-	-	-	-	-	✓
coverOpen	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
cutterError	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	-	✓
etbAvailable	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓
etbCounter	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓
headThermistorError	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
offline	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
overTemp	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓
raw	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
rawLength	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
receiptPaperEmpty	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
receiptPaperNearEmptyInner	-	✓	-	✓	-	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	✓
receiveBufferOverflow	-	-	-	✓	-	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	✓
unrecoverableError	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	✓
voltageError	✓	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
connectedInterface	✓	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

-: ignored.

## 5 PortInfo class (StarIOPort3.1.jar)

This class holds information and model information for connecting to the Star printer.

### Method

Name	Description
<a href="#">getPortName</a>	Get the portName of the printer.
<a href="#">getMacAddress</a>	Get the Mac address of the printer.
<a href="#">getModelName</a>	Get the model name of the printer.
<a href="#">getUSBSerialNumber</a>	Get the USB serial number of the printer of the USB interface.

### 5.1 getPortName Method

Get the portName of the printer.

#### Declaration

```
public String getPortName();
```

#### Parameter

Name	Description	Object type
-	-	-

#### Return value

Description	Object type
Character string to specify the port for communication with the printer. Can be used to specify the printer connection with the getPort method.	String

### 5.2 getMacAddress Method

Get the Mac address of the printer.

#### Declaration

```
public String getMacAddress();
```

#### Parameter

Name	Description	Object type
-	-	-

#### Return value

Description	Object type
Character string that indicates the printer's MAC address. If connecting to the printer via a Bluetooth interface, it can be used to specify the printer connection with the getPort method. If connecting to the printer via a USB interface, it will be an empty string.	String

### 5.3 getModelName Method

Get the model name of the printer.

#### *Declaration*

```
public String getModelName();
```

#### *Parameter*

Name	Description	Object type
-	-	-

#### *Return value*

Description	Object type
Model name When connecting using the Bluetooth interface, it returns an empty string.	String

### 5.4 getUSBSerialNumber Method

Get the USB serial number of the USB interface printer.

#### *Declaration*

```
public String getUSBSerialNumber();
```

#### *Parameter*

Name	Description	Object type
-	-	-

#### *Return value*

Description	Object type
USB printer serial number If connecting to the printer via a USB interface, it can be used to specify the printer connection with the getPort method.	String

## 6 StarBluetoothManager class (StarIOPort3.1.jar)

StarBluetoothManager Class specifies various settings of the Bluetooth interface.  
It can not be used with StarIOPort Class at the same time.

### Constructor

Name	Description
<a href="#">StarBluetoothManager</a>	Initialize StarButtonManager.

### Method

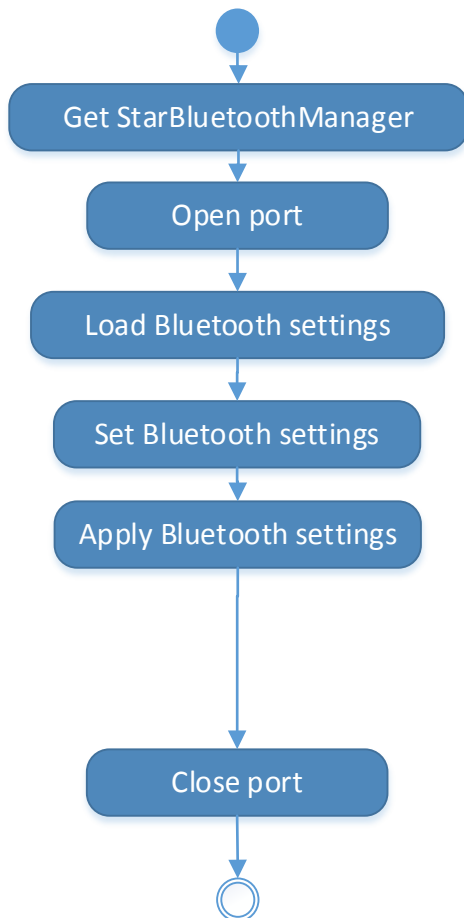
Name	Description
<a href="#">open</a>	This method is used to open connection to the star Bluetooth device.
<a href="#">loadSetting</a>	This method gets the value specified from the star Bluetooth device.
<a href="#">close</a>	This method is used to close communication with the star Bluetooth device.
<a href="#">apply</a>	StarBluetooth device is set to the value specified by the following methods.
<a href="#">getBluetoothDeviceNameCapability</a>	This method gets the setting enable / disable information of the Bluetooth device name.
<a href="#">getBluetoothDeviceName</a>	This method gets the Bluetooth device name
<a href="#">setBluetoothDeviceName</a>	This method sets the Bluetooth device name
<a href="#">getIOPortNameCapability</a>	This method gets the setting enable / disable information of the IOPort name.
<a href="#">getIOPortName</a>	This method gets the IO port name
<a href="#">setIOPortName</a>	This method sets the IO port name
<a href="#">getPinCodeCapability</a>	This method gets the setting enable / disable information of the PinCode.
<a href="#">getPinCode</a>	This method gets the PIN code
<a href="#">setPinCode</a>	This method sets the PIN code
<a href="#">getAutoConnectCapability</a>	This method gets the setting enable / disable information of the Auto Connection.
<a href="#">getAutoConnect</a>	This method gets the value specified of Auto Connection
<a href="#">setAutoConnect</a>	This method sets the Auto Connection
<a href="#">getSecurityTypeCapability</a>	This method gets the setting enable / disable information of the Bluetooth security type.
<a href="#">getSecurityType</a>	This method gets the Bluetooth security type
<a href="#">setSecurityType</a>	This method sets the Bluetooth security type
<a href="#">getPortName</a>	This method gets the port name specified by the StarBluetoothManager constructor.
<a href="#">getPortSettings</a>	This method gets the port setting specified by the StarBluetoothManager constructor.
<a href="#">getTimeoutMillis</a>	This method gets the TimeoutMillis specified by the StarBluetoothManager constructor.
<a href="#">getDeviceType</a>	This method gets the star Device type specified by the StarBluetoothManager constructor.
<a href="#">isOpened</a>	This method acquires the port status.

### Constants

Name	Description
<a href="#">StarDeviceType</a>	Constants of Printer Type
<a href="#">StarBluetoothSecurity</a>	Constants of Bluetooth security type.
<a href="#">StarBluetoothSettingCapability</a>	Constants of enable / disable information of the Bluetooth security type.

## 6.1 Bluetooth setting change flow using StarBluetoothManager

Using the StarBluetoothManager class, follow the steps below to change the printer's Bluetooth settings.



Refer to *BluetoothSettingFragment.java*.

```

StarBluetoothManager manager = null;

try {
    // Get StarBluetoothManager
    manager = StarBluetoothManagerFactory.getManager(portName,
    portSettings, 10000, emulation);

    // Port open
    manager.open();

    // Loading Bluetooth settings
    manager.loadSetting();

    // Set Bluetooth settings
    // Example) When setting the device name to "Star Micronics"
    manager.setBluetoothDeviceName("Star Micronics");

    // Apply Bluetooth settings
    manager.apply();
}
catch (StarIOException e) {
    // Error
}
finally {
    if (manager.isOpened()) {
        try {
            // Port close
            manager.close();
        }
        catch (StarIOException e) {}
    }
}

```

## 6.2 Model: StarBluetoothManager class

Supported Method for each model.

Method	mC-Print2	mC-Print3	mPOP	FVP10	TSP100 (only TSP100IIBI)	TSP650II	TSP700II	TSP800II	SM-S210i *1	SM-S220i *1	SM-S230i *1	SM-T300i/T300 *1	SM-T400i *1	BSC10	SM-S210i StarPRNT	SM-S220i StarPRNT	SM-S230i StarPRNT	SM-T300i/T300 StarPRNT	SM-T400i StarPRNT	SM-L200	SM-L300	SP700
open	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
loadSetting	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
close	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
apply	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
getBluetoothDeviceNameCapabilit y	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
getBluetoothDeviceName	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
setBluetoothDeviceName	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
getiOSPortNameCapability	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
getiOSPortName	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	-	-	✓
setiOSPortName	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	-	-	✓
getPinCodeCapability	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
getPinCode	-	-	-	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
setPinCode	-	-	-	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
getAutoConnectCapability	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
getAutoConnect	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	-	-	✓
setAutoConnect	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	-	-	✓
getSecurityTypeCapability	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
getSecurityType	-	-	-	*2	-	*2	*2	*2	*3	*3	*3	*3	*3	-	*3	*3	*3	*3	*3	*3	*3	*2
setSecurityType	-	-	-	*2	-	*2	*2	*2	*3	*3	*3	*3	*3	-	*3	*3	*3	*3	*3	*3	*3	*2
getPortName	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
getPortSetting	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
getTimeoutMillis	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
getDeviceType	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
isOpened	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓

- : ignored.

\*1: F/W Version 3.0 or later is required.

\*2: The SecurityType that can be set and acquired is PIN code or SSP

\*3: SecurityType that can be set and retrieved is PIN code or Disable



## 6.3 StarBluetoothManager Constructor

Initialize StarBluetoothManager.

### Declaration

```
StarBluetoothManager(String portName, String portSetting, int ioTimeoutMillis,  
StarBluetoothManager.StarDeviceType starDeviceType);
```

### Parameter

Name	Description	Object type
portName	Printer port name It is the same as the portName of the <a href="#">getPort method</a> of the StarIOPort class.	String
portSettings	Port setting It is the same as the portSettings of the <a href="#">getPort method</a> of the StarIOPort class.	String
ioTimeoutMillis	Timeout value for internal control and API.	int
starDeviceType	Constant of printer type	com.starmicronics.stario. StarBluetoothManager.S tarDeviceType

### Return value

Description	Object type
StarBluetoothManager object	com.starmicronics.stario.StarBluetoothManager

### Exception

Description	Object type
When port open fails	com.starmicronics.stario.StarIOPortException

Refer to [Bluetooth setting change flow using StarBluetoothManager](#) about the procedure for changing the Bluetooth setting.

Constant of “StarDeviceType” for each model, refer to [StarDeviceType Constants](#).

#### 1. StarBluetoothManagerFactory class

StarBluetoothManagerFactory class can get the appropriate StarBluetoothManager object for the printer emulation.

## 6.4 open Method

This method is used to open connection to the star Bluetooth device.  
Get the current settings by loadSetting method after conducting open method.

### Declaration

```
public void open();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Exception

Description	Object type
when a communication failure occurs	com.starmicronics.stario.StarIOException

Refer to [Bluetooth setting change flow using StarBluetoothManager](#) about the procedure for changing the Bluetooth setting.

## 6.5 loadSetting Method

This method gets the value specified from the star Bluetooth device.

### Declaration

```
public void loadSetting();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Exception

Description	Object type
when a communication failure occurs	com.starmicronics.stario.StarIOException

Refer to [Bluetooth setting change flow using StarBluetoothManager](#) about the procedure for changing the Bluetooth setting.

## 6.6 close Method

This method is used to close communication with the star Bluetooth device.

### Declaration

```
public void close();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Exception

Description	Object type
when a communication failure occurs	com.starmicronics.stario.StarIOException

Refer to [Bluetooth setting change flow using StarBluetoothManager](#) about the procedure for changing the Bluetooth setting.

## 6.7 apply Method

StarBluetooth device is set to the value specified by the following methods.

- setBluetoothDevice
- setiOSPortName
- setAutoConnect
- setPinCode
- setSecurityType

### Declaration

```
public void apply();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Exception

Description	Object type
when a communication failure occurs	com.starmicronics.stario.StarIOException

Refer to [Bluetooth setting change flow using StarBluetoothManager](#) about the procedure for changing the Bluetooth setting.

## 6.8 getBluetoothDeviceNameCapability Method

This method gets the setting enable / disable information of the Bluetooth device name.

### *Declaration*

```
public StarBluetoothManager.StarBluetoothSettingCapability getBluetoothDeviceNameCapability();
```

### *Parameter*

Name	Description	Object type
-	-	-

### *Return value*

Description	Object type
enable / disable information of the Bluetooth device name	StarBluetoothManager.StarBluetoothSettingCapability

## 6.9 getBluetoothDeviceName Method

This method gets the Bluetooth device name which was acquired by the loadSetting method or specified by the setBluetoothDeviceName method. Use this method after calling the loadSetting method or the setBluetoothDeviceName method.

### *Declaration*

```
public String getBluetoothDeviceName();
```

### *Parameter*

Name	Description	Object type
-	-	-

### *Return value*

Description	Object type
Bluetooth device name	String

## 6.10 setBluetoothDeviceName Method

This method sets the iOS port name.

To change the iOS port name, execute the apply method after the setiOSPortName method.

### Declaration

```
public void setBluetoothDeviceName(String bluetoothDeviceName);
```

### Parameter

Name	Description	Object type
bluetoothDeviceName	Bluetooth Device Name	String

### Return value

Description	Object type
-	-

### Exception

Description	Object type
when any invalid characters are used when the length of the set character string is not valid number of characters.	com.starmicronics.stario.StarIOException

#### 1. Valid characters:

0-9 a-z A-Z ; : ! ? # \$ % & , . @ \_ - = Space / \* + ~ ^ [ { ( ) } ] | \

#### 2. Valid number of characters

between 1 to 16 characters

## 6.11 getiOSPortNameCapability Method

This method gets the setting enable / disable information of the iOS Port Name.

### Declaration

```
public StarBluetoothManager.StarBluetoothSettingCapability getiOSPortName();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
enable / disable information of the iOS Port Name	StarBluetoothManager.StarBluetoothSettingCapability

## 6.12 getiOSPortName Method

This method gets the iOS port name which was acquired by the loadSetting method or specified by the setiOSPortName method. Use this method after calling the loadSetting method or the setiOSPortName method.

### Declaration

```
public String getiOSPortName();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
iOS Port Name	String

## 6.13 setiOSPortName Method

This method sets the iOS port name.

To change the iOS port name, execute the apply method after the setiOSPortName method.

### Declaration

```
public void setiOSPortName(String iOSPortName);
```

### Parameter

Name	Description	Object type
iOSPortName	iOS Port Name	String

### Return value

Description	Object type
-	-

### Exception

Description	Object type
- when any invalid characters are used	com.starmicronics.stario.StarIOException
- when the length of the set character string is not valid number of characters.	

#### 1. Valid characters:

0-9 a-z A-Z ; : ! ? # \$ % & , . @ \_ - = Space / \* + ~ ^ [ { ( ) } ] \

#### 2. Valid number of characters

between 1 to 16 characters

## 6.14 getPinCodeCapability Method

This method gets the setting enable / disable information of the Pin Code.

### *Declaration*

```
public StarBluetoothManager.StarBluetoothSettingCapability getPinCodeCapability();
```

### *Parameter*

Name	Description	Object type
-	-	-

### *Return value*

Description	Object type
enable / disable information of the Pin Code	StarBluetoothManager.StarBluetoothSettingCapability

## 6.15 getPinCode Method

This method gets the PIN code which was specified by the setPinCode method. Use this method after calling the set PinCode method.

### *Declaration*

```
public String getPinCode();
```

### *Parameter*

Name	Description	Object type
-	-	-

### *Return value*

Description	Object type
Pin Code	String

## 6.16 setPinCode Method

The method sets the PIN code of the Star Bluetooth devices.

To change the PIN code, execute the apply method after the setPinCode method.

### Declaration

```
public void setPinCode(String pinCode);
```

### Parameter

Name	Description	Object type
-	-	String

### Return value

Description	Object type
-	-

### Exception

Description	Object type
- when any invalid characters are used	com.starmicronics.stario.StarIOException
- when the length of the set character string is not valid number of characters.	

1. Valid characters:

- 0-9 (SM-L200, SM-L300)
- 0-9 a-z A-Z (other models)

2. Valid number of characters

- 4 characters (SM-L200, SM-L300)
- between 4 to 16 characters (other models)

## 6.17 getAutoConnectCapability Method

This method gets the setting enable / disable information of the AutoConnection.

### Declaration

```
public StarBluetoothManager.StarBluetoothSettingCapability getAutoConnectCapability();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
enable / disable information of the AutoConnection	StarBluetoothManager.StarBluetoothSettingCapability



## 6.18 getAutoConnect Method

This method gets the value specified of Auto Connection which was acquired by the loadSetting method or specified by the setAutoConnect method. Use this method after calling the loadSetting method or the setAutoConnect method.

### Declaration

```
public boolean getAutoConnect();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
AutoConnection setting true - when AutoConnection setting is ON false - when AutoConnection setting is OFF	boolean

## 6.19 setAutoConnect Method

This method sets the Auto Connection of Star Bluetooth Device.  
To change the Auto Connection, execute the apply method after the setAutoConnect method.

### Declaration

```
public void setAutoConnect(boolean autoConnect);
```

### Parameter

Name	Description	Object type
autoConnect	AutoConnection setting true - when AutoConnection setting is ON false - when AutoConnection setting is OFF	boolean

### Return value

Description	Object type
-	-

## 6.20 getSecurityTypeCapability Method

This method gets the setting enable / disable information of the Bluetooth security type.

### Declaration

```
public StarBluetoothManager.StarBluetoothSettingCapability getSecurityTypeCapability();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
enable / disable information of the Bluetooth security type	StarBluetoothManager.StarBluetoothSettingCapability

## 6.21 getSecurityType Method

This method gets the Bluetooth security type which was acquired by the loadSetting method or specified by the setSecurityType method. Use this method after calling the loadSetting method or the setSecurityType method.

### Declaration

```
public StarBluetoothManager.StarBluetoothSecurity getSecurityType();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
Bluetooth security type	com.starmicronics.stario.StarBluetoothManager.StarBluetoothSecurity

## 6.22 setSecurityType Method

This method sets the Bluetooth security type of star Bluetooth device.  
To change the Bluetooth security type, execute the apply method after the setSecurityType method.

### Declaration

```
public void setSecurityType(StarBluetoothManager.StarBluetoothSecurity securityType);
```

### Parameter

Name	Description	Object type
securityType	Bluetooth security type	com.starmicronics.stario.StarBluetoothManager.StarBluetoothSecurity

### Return value

Description	Object type
-	-

## 6.23 getPortName Method

This method gets the portName when the port is opened.

### *Declaration*

```
public String getPortName();
```

### *Parameter*

Name	Description	Object type
-	-	-

### *Return value*

Description	Object type
the port name specified by the getPort method.	String

## 6.24 getPortSettings Method

This method gets the portSettings when the port is opened.

### *Declaration*

```
public String getPortSettings();
```

### *Parameter*

Name	Description	Object type
-	-	-

### *Return value*

Description	Object type
the portSettings specified by the getPort method.	String

## 6.25 getTimeoutMillis Method

This method gets the TimeoutMillis specified by the StarBluetoothManager constructor.

### *Declaration*

```
public int getTimeoutMillis();
```

### *Parameter*

Name	Description	Object type
-	-	-

### *Return value*

Description	Object type
TimeoutMillis specified by the StarBluetoothManager constructor	int

## 6.26 getDeviceType Method

This method gets the star Device type specified by the StarBluetoothManager constructor.

### Declaration

```
public StarBluetoothManager.StarDeviceType getDeviceType();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
star Device type specified by the StarBluetoothManager constructor	StarBluetoothManager.StarDeviceType

## 6.27 isOpened Method

This method acquires the port status.

### Declaration

```
public boolean isOpened();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
port status true - The port is opened. false - The port is Closed.	boolean

## 6.28 StarDeviceType Constants

### Constants of Printer Type

#### Declaration

```
public enum StarDeviceType {
    StarDeviceTypeDesktopPrinter,
    StarDeviceTypePortablePrinter
}
```

#### Constants

Name	Description
StarDeviceTypeDesktopPrinter	Desktop Printer
StarDeviceTypePortablePrinter	Portable Printer

Constant of "StarDeviceType" for each model.

Model	StarDeviceType
TSP100	StarDeviceTypeDesktopPrinter
FVP10	
TSP650II	
TSP700II	
TSP800II	
BSC10	
SP700	
mC-Print2	StarDeviceTypePortablePrinter
mC-Print3	
mPOP	
SM-S210i	
SM-S220i	
SM-S230i	
SM-T300i	
SM-T400i	
SM-S210i StarPRNT	
SM-S220i StarPRNT	
SM-S230i StarPRNT	
SM-T300i StarPRNT	
SM-T400i StarPRNT	
SM-L200	
SM-L300	

## 6.29 StarBluetoothSecurity Constants

Constants of Bluetooth security type.

### *Declaration*

```
public enum StarBluetoothSecurity {
    PINCODE,
    SSP,
    DISABLE
}
```

### *Constants*

Name	Description
PINCODE	Security by entering PIN code
SSP	Security by pressing the interface card button
DISABLE	No security

## 6.30 StarBluetoothSettingCapability Constants

Constants of enable / disable information of the Bluetooth setting.

### *Declaration*

```
public enum StarBluetoothSecurity {
    SUPPORT,
    NOSUPPORT
}
```

### *Constants*

Name	Description
SUPPORT	Indicates the items and functions can be set for the printer that is currently connected.
NOSUPPORT	Indicates the items and functions can not be set for the printer that is currently connected.

## 7 StarIoExt class included in the starioextension.jar

### Method

Name	Description
createCommandBuilder	Creates the command builder object.
createDisplayCommandBuilder	Creates the customer display command builder object.
createBcrConnectParser	Creates a barcode reader connection status command response analysis object.
createDisplayConnectParser	Creates a customer display connection status command response analysis object.

### Constants

Name	Description
Emulation	Emulation type constants.
CharacterCode	Character Code constants
BcrModel	Barcode Reader Model constants
DisplayModel	Customer Display Model constants

## 7.1 createCommandBuilder Method

Creates the ICommandBuilder object.

### Declaration

```
public static ICommandBuilder createCommandBuilder(Emulation emulation);
```

### Parameter

Name	Description	Object type
emulation	Emulation type. <ul style="list-style-type: none"> <li>StarPRNT ... StarPRNT emulation.</li> <li>StarPRNTL ... StarPRNTL emulation</li> <li>StarLine ... STAR Line Mode emulation.</li> <li>StarGraphic ... STAR Graphic Mode emulation.</li> <li>EscPos ... ESC/POS emulation.</li> <li>EscPosMobile ... ESC/POS Mobile emulation.</li> <li>StarDotImpact ... STAR Dot Impact emulation.</li> </ul>	com.starmicronics.starioextension.StarloExt.Emulation

### Return value

Description	Object type
ICommandBuilder object.	com.starmicronics.starioextension.ICommandBuilder

Constant of "Emulation" for each model, refer to [Emulation Constants](#).

### Example

```
public static byte[] createCommandsImage(Emulation emulation, Bitmap bitmap) {
    ICommandBuilder builder = StarloExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendBitmap(bitmap, false);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *PrinterFunctions.java*.



## 7.2 createDisplayCommandBuilder Method

Creates the customer display command builder object.

### Declaration

```
public static IDisplayCommandBuilder createDisplayCommandBuilder(DisplayModel model);
```

### Parameter

Name	Description	Object type
model	Customer display constants • SCD222	com.starmicronics.starioextension. StarloExt.DisplayModel

### Return value

Description	Object type
IDisplayCommandBuilder object	com.starmicronics.starioextension. IDisplayCommandBuilder

### Example

```
public static byte[] createTextPattern(int number) {
    IDisplayCommandBuilder builder = StarloExt.createDisplayCommandBuilder(DisplayModel.SCD222);

    builder.appendClearScreen();
    builder.appendCursorMode(CursorMode.Off);
    builder.appendHomePosition();

    byte[] pattern;

    ...

    builder.append(pattern);

    return builder.getPassThroughCommands();
}
```

Refer to *DisplayFunctions.java*.

### 7.3 createBcrConnectParser Method

Creates a barcode reader connection status command response analysis object.

#### *Declaration*

```
public static IPeripheralConnectParser createBcrConnectParser(BcrModel model);
```

#### *Parameter*

Name	Description	Object type
model	Barcode Reader Model constants. • POP1	com.starmicronics.starioextension. StarIoExt.BcrModel

#### *Return value*

Description	Object type
IPeripheralConnectParser object	com.starmicronics.starioextension. IPeripheralConnectParser

## 7.4 createDisplayConnectParser Method

Creates a customer display connection status command response analysis object.

### Declaration

```
public static IPeripheralConnectParser createDisplayConnectParser(DisplayModel model);
```

### Parameter

Name	Description	Object type
model	Customer display constants • SCD222	com.starmicronics.starioextension. StarloExt.DisplayModel

### Return value

Description	Object type
IPeripheralConnectParser object	com.starmicronics.starioextension. IPeripheralConnectParser

### Example

```
public void onItemClick(final AdapterView<?> parent, View view, final int position, long id) {
    super.onItemClick(parent, view, position, id);

    CommonAlertDialogFragment dialog = null;

    if (position == 1) {
        mProgressDialog.show();

        PrinterSetting setting = new PrinterSetting(getActivity());

        final IPeripheralConnectParser parser = StarloExt.createDisplayConnectParser(DisplayModel.SCD222);

        Communication.parseDoNotCheckCondition(DisplayFragment.class, parser, setting.getPortName(),
        setting.getPortSettings(), 10000, getActivity(), new Communication.SendCallback() {
            @Override
            public void onStatus(boolean result, Communication.Result communicateResult) {
                ...

                String msg;
                String title;

                if (result) {
                    title = "Check Status";

                    if (parser.isConnected()) {
                        msg = "Display Connect";
                    }
                    else {
                        msg = "Display Disconnect";
                    }
                }
                else {
                    title = "Communication Result";
                    msg = "Printer Impossible";
                }
            }
            ...
        });
    }
    ...
}
```

Refer to *DisplayFragment.java/DisplayExtFragment.java*.

## 7.5 Emulation Constants

Emulation type constants.

### *Declaration*

```
public enum Emulation {
    None,
    StarPRNT,
    StarPRNTL,
    StarLine,
    StarGraphic,
    EscPos,
    EscPosMobile,
    StarDotImpact
}
```

### *Constants*

Name	Description
StarPRNT	StarPRNT emulation.
StarPRNTL	StarPRNTL emulation.
StarLine	STAR Line Mode emulation.
StarGraphic	STAR Graphic Mode emulation.
EscPos	ESC/POS emulation.
EscPosMobile	ESC/POS Mobile emulation.
StarDotImpact	STAR Dot Impact emulation.

#### 1. StarPRNTL emulation

StarPRNTL emulation reduces the command size with the [appendBitmap](#)-type method that generates a raster image printing command.

The time it takes to send the raster image command is reduced.

StarPRNTL emulation can only be selected on some supported models. For usable models, refer to the supported printers.

Constant of “Emulation” for each model.

Model	Emulation
mC-Print2	StarPRNT
mC-Print3	StarPRNT
mPOP	StarPRNT
FVP10	StarLine
TSP100	StarGraphic
TSP650II	StarLine
TSP700II	StarLine
TSP800II	StarLine
SM-S210i	EscPosMobile
SM-S220i	EscPosMobile
SM-S230i	EscPosMobile
SM-T300i/T300	EscPosMobile
SM-T400i	EscPosMobile
BSC10	EscPos
SM-S210i StarPRNT	StarPRNT
SM-S220i StarPRNT	StarPRNT
SM-S230i StarPRNT	StarPRNT
SM-T300i/T300 StarPRNT	StarPRNT
SM-T400i StarPRNT	StarPRNT
SM-L200	StarPRNT
	StarPRNTL
SM-L300	StarPRNT
	StarPRNTL
SP700	StarDotImpact

## 7.6 CharacterCode Constants

Character code type constants.

### Declaration

```
public enum CharacterCode {
    None,
    Standard,
    Japanese,
    SimplifiedChinese,
    TraditionalChinese
}
```

### Constants

Name	Description
Standard	Standard character code.
Japanese	Japanese character code.
SimplifiedChinese	Simplified chinese character code.
TraditionalChinese	Traditional chinese character code.

## 7.7 BcrModel Constants

Barcode Reader Model constants.

### *Declaration*

```
public enum BcrModel {
    None,
    POP1,
}
```

### *Constants*

Name	Description
POP1	Barcode reader : BCR-POP1

## 7.8 DisplayModel Constants

Customer Display Model constants.

```
public enum CharacterCode {
    None,
    SCD222,
}
```

### *Constants*

Name	Description
SCD222	Customer display: SCD222U

## 8 ICommandBuilder interface included in the starioextension.jar

### Method

Name	Description
beginDocument	Begin document command is generated and added to the command buffer.
endDocument	End document command is generated and added to the command buffer.
appendInitialization	Initialization command is generated and added to the command buffer.
append	Data is added to the command buffer.
appendRaw	Raw data is added to the command buffer.
appendFontStyle	Select command of the font style is generated and added to the command buffer.
appendCodePage	Select command of the code page is generated and added to the command buffer.
appendInternational	Select command of the international character mode is generated and added to the command buffer.
appendLineFeed	Line feed command is generated and added to the command buffer.
appendUnitFeed	Unit feed command is generated and added to the command buffer.
appendCharacterSpace	Set command of the character space is generated and added to the command buffer.
appendLineSpace	Set command of the line space is generated and added to the command buffer.
appendTopMargin	Set command of the top margin is generated and added to the command buffer.
appendEmphasis	Select command of the emphasis mode is generated and added to the command buffer.
appendInvert	Select command of the invert mode is generated and added to the command buffer.
appendMultiple appendMultipleHeight appendMultipleWidth	Select command of the multiple mode is generated and added to the command buffer.
appendUnderLine	Select command of the underline mode is generated and added to the command buffer.
appendLogo	Print command of the logo is generated and added to the command buffer.
appendAbsolutePosition	Absolute position command is generated and added to the command buffer.
appendAlignment	Alignment command is generated and added to the command buffer.
appendHorizontalTabPosition	Horizontal tab set/clear command is generated and added to the command buffer.
appendCutPaper	Paper cut command is generated and added to the command buffer.
appendPeripheral	Cash drawer command is generated and added to the command buffer.
appendSound	Sound/Buzzer command is generated and added to the command buffer.
appendBarcode	Print command of the barcode is generated and added to the command buffer.
appendBarcodeWithAbsolutePosition	Print command of the absolute position barcode is generated and added to the command buffer.
appendBarcodeWithAlignment	Print command of the alignment barcode is generated and added to the command buffer.
appendPdf417	Print command of the PDF417 is generated and added to the command buffer.
appendPdf417WithAbsolutePosition	Print command of the absolute position PDF417 is generated and added to the command buffer.
appendPdf417WithAlignment	Print command of the alignment PDF417 is generated and added to the command buffer.
appendQrCode	Print command of the QR code is generated and added to the command buffer.

Name	Description
appendQrCodeWithAbsolutePosition	Print command of the absolute position QR code is generated and added to the command buffer.
appendQrCodeWithAlignment	Print command of the alignment QR code is generated and added to the command buffer.
appendBitmap	Print command of the bitmap is generated and added to the command buffer.
appendBitmapWithAbsolutePosition	Print command of the absolute position bitmap is generated and added to the command buffer.
appendBitmapWithAlignment	Print command of the alignment bitmap is generated and added to the command buffer.
appendBlackMark	Black mark command is generated and added to the command buffer.
beginPageMode	Begin page mode command is generated and added to the command buffer.
endPageMode	End page mode command is generated and added to the command buffer.
appendPageModeVerticalAbsolutePosition	Vertical absolute position in page mode command is generated and added to the command buffer.
appendPageModeRotation	Print direction in page mode command is generated and added to the command buffer.
appendPrintableArea	Set command of the printable area is generated and added to the command buffer.
getCommands	Gets the command buffer.

### Constants

Name	Description
InitializationType	Initialization constants.
FontStyleType	Font style constants.
CodePageType	Code Page constants.
InternationalType	International character constants.
LogoSize	Logo size constants.
AlignmentPosition	Alignment position constants.
CutPaperAction	Paper cut constants.
PeripheralChannel	Cash drawer channel constants.
SoundChannel	Sound/Buzzer channel constants.
BarcodeSymbology	Barcode symbology constants.
BarcodeWidth	Barcode width constants.
Pdf417Level	PDF417 ECC (security level) constants.
QrCodeModel	QR code model constants.
QrCodeLevel	QR code mistake correction level constants.
BitmapConverterRotation	Bitmap rotation constants.
BlackMarkType	Black mark constants.
PrintableAreaType	Printable area constants.



## 8.1 Model : ICommandBuilder interface Method

Supported Method for each model.

Function	Method	mC-Print2	mC-Print3	mPOP	FVP10	TSP100	TSP650II	TSP700II	TSP800II	SM-S210i	SM-S220i	SM-S230i	SM-T300i/T300	SM-T400i	BSC10	SM-S210i StarPRNT	SM-S220i StarPRNT	SM-S230i StarPRNT	SM-T300i/T300 StarPRNT	SM-T400i StarPRNT	SM-L200	SM-L300	SP700
Document control	beginDocument	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	endDocument	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Initialization	appendInitialization	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Data (Text and Command)	append	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Raw data (Text and Command)	appendRaw	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Font style	appendFontStyle	✓	✓	✓	✓	-	✓	✓	✓	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓
Code page	appendCodePage	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
International	appendInternational	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Line feed	appendLineFeed	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unit feed	appendUnitFeed	✓	✓	✓	✓	*1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Character space	appendCharacterSpace	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Line space	appendLineSpace	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Top margin	appendTopMargin	-	*7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Emphasis	appendEmphasis	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Invert	appendInvert	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Multiple	appendMultiple	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	appendMultipleHeight	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	appendMultipleWidth	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Under line	appendUnderLine	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Logo	appendLogo	✓	✓	✓	✓	-	✓	✓	✓	*2	*2	*2	*2	*2	✓	✓	✓	✓	✓	✓	✓	✓	✓

Function	Method	mC-Print2	mC-Print3	mPOP	FVP10	TSP100	TSP650II	TSP700II	TSP800II	SM-S210i	SM-S220i	SM-S230i	SM-T300i/T300	SM-T400i	BSC10	SM-S210i StarPRNT	SM-S220i StarPRNT	SM-S230i StarPRNT	SM-T300i/T300 StarPRNT	SM-T400i StarPRNT	SM-L200	SM-L300	SP700
Absolute position	appendAbsolutePosition	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Alignment	appendAlignment	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Horizontal Tab position	appendHorizontalTabPosition	✓	✓	✓	✓	-	✓	✓	✓	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cut paper	appendCutPaper	✓	✓	✓	✓	✓	✓	✓	✓	*3	*3	*3	*3	*3	✓	*3	*3	*3	*3	*3	*3	*3	✓
Peripheral	appendPeripheral	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	✓	-	-	-	-	-	-	-	✓
Sound	appendSound	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	✓	-	-	-	-	-	-	-	✓
Barcode	appendBarcode	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
	appendBarcodeWithAbsolutePosition	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
	appendBarcodeWithAlignment	✓	✓	✓	✓	*4	✓	✓	✓	*4	*4	*4	*4	*4	✓	✓	✓	✓	✓	✓	✓	✓	-
PDF417	appendPdf417	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
	appendPdf417WithAbsolutePosition	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
	appendPdf417WithAlignment	✓	✓	✓	✓	*4	✓	✓	✓	*4	*4	*4	*4	*4	✓	✓	✓	✓	✓	✓	✓	✓	-
QR code	appendQrCode	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
	appendQrCodeWithAbsolutePosition	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
	appendQrCodeWithAlignment	✓	✓	✓	✓	*4	✓	✓	✓	*4	*4	*4	*4	*4	✓	✓	✓	✓	✓	✓	✓	✓	-
Bitmap	appendBitmap	✓	✓	✓	✓	✓	✓	✓	✓	*5	*5	*5	*5	*5	✓	✓	✓	✓	✓	✓	✓	✓	✓
	appendBitmapWithAbsolutePosition	✓	✓	✓	✓	✓	✓	✓	✓	*5	*5	*5	*5	*5	✓	✓	✓	✓	✓	✓	✓	✓	✓
	appendBitmapWithAlignment	✓	✓	✓	✓	*4	✓	✓	✓	*4*5	*4*5	*4*5	*4*5	*4*5	✓	✓	✓	✓	✓	✓	✓	✓	✓
Black mark	appendBlackMark	-	-	-	✓	-	-	✓	✓	*6	*6	*6	*6	*6	-	*6	*6	*6	*6	*6	*6	*6	✓
Page mode	beginPageMode	✓	✓	✓	✓	-	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
	endPageMode	✓	✓	✓	✓	-	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
	appendPageModeVerticalAbsolutePosition	✓	✓	✓	✓	-	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
	appendPageModeRotation	✓	✓	✓	✓	-	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
Printable area	appendPrintableArea	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	✓	-	-	-	-	-	-	✓	✓

-. ignored.

\*1: Do not append data, append unit feed command only.

\*2: Always print from normal size.

\*3: Without paper cut.

\*4: Always print from left side.

\*5: The maximum vertical direction printing area is 30cm (2400 dot).

\*6: Need to change printer setting to "BM Valid".

Refer to User's manual for how to change.

\*7: When the top margin is set to 10 mm or less, the paper length (cut length) should not exceed 50mm.

(If the cut paper remains at the paper-exit, a paper jam may occur. There is no limitation when the cut paper is removed.)

## 8.2 beginDocument Method

Begin document command is generated and added to the command buffer.

### Declaration

```
void beginDocument();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

### 8.3 endDocument Method

End document command is generated and added to the command buffer.

#### Declaration

```
void endDocument();
```

#### Parameter

Name	Description	Object type
-	-	-

#### Return value

Description	Object type
-	-

#### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.4 appendInitialization Method

Initialization command is generated and added to the command buffer.

### Declaration

```
void appendInitialization(InitializationType type);
```

### Parameter

Name	Description	Object type
type	Initialization type. <ul style="list-style-type: none"> <li>• Command ... Command initialization.</li> <li>• <del>Reset ... Reset printer.</del></li> <li>• <del>ResetWithPrint ... Reset printer (execute self print).</del></li> </ul>	com.starmicronics.starioextension.ICommandBuilder.InitializationType

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendUnderLine(true);
    builder.appendMultiple(2, 2);
    builder.append(data);

    builder.appendInitialization(InitializationType.Command);

    builder.append(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.5 append Method

Data (Text and Command) is added to the command buffer.

### Declaration

```
void append(byte data);
```

```
void append(byte[] data);
```

### Parameter

Name	Description	Object type
data	Data (Text and Command).	byte byte[]

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.".getBytes();

    bytes[] data = new byte[] {0x48, 0x65, 0x6c, 0x6c, 0x6f, 0x20, 0x57, 0x6f, 0x72, 0x6c, 0x64, 0x2e};

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append(data);
    builder.append((byte) 0x0a);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.6 appendRaw Method

Raw data (Text and Command) is added to the command buffer.

### Declaration

```
void appendRaw(byte data);
```

```
void appendRaw(byte[] data);
```

### Parameter

Name	Description	Object type
data	Raw data (Text and Command).	byte byte[]

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Context context, Emulation emulation, Bitmap bitmap, RequestCallback callback) {
    String urlString = AllReceipts.uploadBitmap(context, bitmap, callback);

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendBitmap(bitmap, false);

    byte[] data = AllReceipts.generateAllReceipts(context, urlString, emulation, true, true);

    builder.appendRaw(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *AllReceiptsFunctions.java* and each *Command Specifications*.



## 8.7 appendFontStyle Method

Select command of the font style is generated and added to the command buffer.

### Declaration

```
void appendFontStyle(FontStyleType type);
```

### Parameter

Name	Description	Object type
type	Font style. <ul style="list-style-type: none"> <li>A ... Font-A (12 x 24 dots) / Specify 7 x 9 font (half dots)</li> <li>B ... Font-B (9 x 24 dots) / Specify 5 x 9 font (2P-1)</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.FontStyleType

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendFontStyle(FontStyleType.A);
    builder.append(data);
    builder.appendFontStyle(FontStyleType.B);
    builder.append(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* and each *Command Specifications*.

## 8.8 appendCodePage Method

Select command of the code page is generated and added to the command buffer.

### Declaration

```
void appendCodePage(CodePageType type);
```

### Parameter

Name	Description	Object type
type	<p>Code Page.</p> <ul style="list-style-type: none"> <li>• CP437 ... CodePage437 (USA, Std. Europe).</li> <li>• CP737 ... Codepage 737 (Greek).</li> <li>• CP772 ... Codepage 772 (Lithuanian).</li> <li>• CP774 ... Codepage 774 (Lithuanian).</li> <li>• CP851 ... Codepage 851 (Greek).</li> <li>• CP852 ... Codepage 852 (Latin-2).</li> <li>• CP855 ... Codepage 855 (Cyrillic Bulgarian).</li> <li>• CP857 ... Codepage 857 (Turkey).</li> <li>• CP858 ... Codepage 858 (Multilingual).</li> <li>• CP860 ... Codepage 860 (Portuguese).</li> <li>• CP861 ... Codepage 861 (Icelandic).</li> <li>• CP862 ... Codepage 862 (Israel (Hebrew)).</li> <li>• CP863 ... Codepage 863 (Canadian French).</li> <li>• CP864 ... Codepage 864 (Arabic).</li> <li>• CP865 ... Codepage 865 (Nordic).</li> <li>• CP866 ... Codepage 866 (Cyrillic Russian).</li> <li>• CP869 ... Codepage 869 (Greek).</li> <li>• CP874 ... Codepage 874 (Thai).</li> <li>• CP928 ... Codepage 928 (Greek).</li> <li>• CP932 ... Katakana.</li> <li>• CP998 ... Normal.</li> <li>• CP999 ... Codepage 1252 (Windows Latin-1).</li> <li>• CP1001 ... Codepage 1001 (Arabic).</li> <li>• CP1250 ... Codepage 1250 (Windows Latin-2).</li> <li>• CP1251 ... Codepage 1251 (Windows Cyrillic).</li> <li>• CP1252 ... Codepage 1252 (Windows Latin-1).</li> <li>• CP2001 ... Codepage 2001 (Lithuanian-KBL).</li> <li>• CP3001 ... Codepage 3001 (Estonian-1).</li> <li>• CP3002 ... Codepage 3002 (Estonian-2).</li> <li>• CP3011 ... Codepage 3011 (Latvian-1).</li> <li>• CP3012 ... Codepage 3012 (Latvian-2).</li> <li>• CP3021 ... Codepage 3021 (Bulgarian).</li> <li>• CP3041 ... Codepage 3041 (Maltese).</li> <li>• CP3840 ... Codepage 3840 (IBM-Russian).</li> <li>• CP3841 ... Codepage 3841 (Gost).</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.CodePageType

Name	Description	Object type
	<ul style="list-style-type: none"> <li>CP3843 ... Codepage 3843 (Polish).</li> <li>CP3844 ... Codepage 3844 (CS2).</li> <li>CP3845 ... Codepage 3845 (Hungarian).</li> <li>CP3846 ... Codepage 3846 (Turkish).</li> <li>CP3847 ... Codepage 3847 (Brazil-ABNT).</li> <li>CP3848 ... Codepage 3848 (Brazil-ABICOMP).</li> <li>UTF8 ... UTF-8.</li> <li>Blank ... User Setting Blank Code Page.</li> </ul>	

### Return value

Description	Object type
-	-

### Example

```

public static byte[] createData(Emulation emulation) {
    byte[] data8 = new byte[] {0x80, 0x81, 0x82, 0x83, 0x84, 0x85, 0x86, 0x87, 0x88, 0x89, 0x8a, 0x8b, 0x8c, 0x8d, 0x8e, 0x8f, 0x0a};
    byte[] data9 = new byte[] {0x90, 0x91, 0x92, 0x93, 0x94, 0x95, 0x96, 0x97, 0x98, 0x99, 0x9a, 0x9b, 0x9c, 0x9d, 0x9e, 0x9f, 0x0a};
    byte[] dataA = new byte[] {0xa0, 0xa1, 0xa2, 0xa3, 0xa4, 0xa5, 0xa6, 0xa7, 0xa8, 0xa9, 0xaa, 0xab, 0xac, 0xad, 0xae, 0xaf, 0x0a};
    byte[] dataB = new byte[] {0xb0, 0xb1, 0xb2, 0xb3, 0xb4, 0xb5, 0xb6, 0xb7, 0xb8, 0xb9, 0xba, 0xbb, 0xbc, 0xbd, 0xbe, 0xbf, 0x0a};
    byte[] dataC = new byte[] {0xc0, 0xc1, 0xc2, 0xc3, 0xc4, 0xc5, 0xc6, 0xc7, 0xc8, 0xc9, 0xca, 0xcb, 0xcc, 0xcd, 0xce, 0xcf, 0x0a};
    byte[] dataD = new byte[] {0xd0, 0xd1, 0xd2, 0xd3, 0xd4, 0xd5, 0xd6, 0xd7, 0xd8, 0xd9, 0xda, 0xdb, 0xdc, 0xdd, 0xde, 0xdf, 0x0a};
    byte[] dataE = new byte[] {0xe0, 0xe1, 0xe2, 0xe3, 0xe4, 0xe5, 0xe6, 0xe7, 0xe8, 0xe9, 0xea, 0xeb, 0xec, 0xed, 0xee, 0xef, 0x0a};
    byte[] dataF = new byte[] {0xf0, 0xf1, 0xf2, 0xf3, 0xf4, 0xf5, 0xf6, 0xf7, 0xf8, 0xf9, 0xfa, 0xfb, 0xfc, 0xfd, 0xfe, 0xff, 0x0a};

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendCodePage(CodePageType.CP932);

    builder.append(data8);
    builder.append(data9);
    builder.append(dataA);
    builder.append(dataB);
    builder.append(dataC);
    builder.append(dataD);
    builder.append(dataE);
    builder.append(dataF);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}

```

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.9 appendInternational Method

Select command of the international character mode is generated and added to the command buffer.

### Declaration

```
void appendInternational(InternationalType type);
```

### Parameter

Name	Description	Object type
type	International character. <ul style="list-style-type: none"> <li>• USA ... USA.</li> <li>• France ... France.</li> <li>• Germany ... Germany.</li> <li>• UK ... UK.</li> <li>• Denmark ... Denmark.</li> <li>• Sweden ... Sweden.</li> <li>• Italy ... Italy.</li> <li>• Spain ... Spain.</li> <li>• Japan ... Japan.</li> <li>• Norway ... Norway.</li> <li>• Denmark2 ... Denmark   .</li> <li>• Spain2 ... Spain   .</li> <li>• LatinAmerica ... Latin America.</li> <li>• Korea ... Korea.</li> <li>• Ireland ... Ireland.</li> <li>• Legal ... Legal.</li> </ul>	com.starmicronics.starextension.ICommandBuilder.InternationalType

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {  
    bytes[] data = new byte[] {0x23, 0x24, 0x40, 0x58, 0x5a, 0x5b, 0x5c, 0x5d, 0x5e, 0x60, 0x7b, 0x7c, 0x7d, 0x7e, 0x0a};  
  
    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);  
  
    builder.beginDocument();  
  
    builder.appendInternational(InternationalType.USA);  
    builder.append(data);  
  
    builder.appendInternational(InternationalType.Japan);  
    builder.append(data);  
  
    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);  
  
    builder.endDocument();  
  
    return builder.getCommands();  
}
```

*Refer to `ApiFunctions.java` and each Command Specifications.*

## 8.10 appendLineFeed Method

Line feed command is generated and added to the command buffer.

### Declaration

```
void appendLineFeed();
```

```
void appendLineFeed(byte[] data);
```

```
void appendLineFeed(int line);
```

```
void appendLineFeed(byte[] data, int line);
```

### Parameter

Name	Description	Object type
line	Paper feed units. (Units : Lines)	int
data	Data (Text and Command).	byte[]

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append(data);
    builder.appendLineFeed();

    builder.appendLineFeed(data);

    builder.append(data);
    builder.appendLineFeed(2);

    builder.appendLineFeed(data, 2);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.11 appendUnitFeed Method

Unit feed command is generated and added to the command buffer.

### Declaration

```
void appendUnitFeed(int unit);
```

```
void appendUnitFeed(byte[] data, int unit);
```

### Parameter

Name	Description	Object type
unit	Paper feed units. (Units : Dots)	int
data	Data (Text and Command).	byte[]

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append(data);
    builder.appendUnitFeed(64);

    builder.appendUnitFeed(data, 64);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.12 appendCharacterSpace Method

Set command of the character space is generated and added to the command buffer.

### Declaration

```
void appendCharacterSpace(int space);
```

### Parameter

Name	Description	Object type
space	Character spaces. (Units : Dots)	int

### Return value

Description	Object type
-	-

### 1. Notes

In Japanese, Simplified Chinese, Traditional Chinese, and Korean (DBCS), the character space is to be twice.

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendCharacterSpace(0);
    builder.append(data);
    builder.appendCharacterSpace(4);
    builder.append(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.



## 8.13 appendLineSpace Method

Set command of the line space is generated and added to the command buffer.

### Declaration

```
void appendLineSpace(int lineSpace);
```

### Parameter

Name	Description	Object type
lineSpace	Line spaces. (Units : Dots)	int

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendLineSpace(32);
    builder.append(data);
    builder.append(data);
    builder.append(data);
    builder.appendLineSpace(24);
    builder.append(data);
    builder.append(data);
    builder.append(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.14 appendTopMargin Method

Set command of the top margin is generated and added to the command buffer.

### Declaration

```
void appendTopMargin(int margin);
```

### Parameter

Name	Description	Object type
margin	Top margin. (Units : Millimeter)	int

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createTopMarginData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendTopMargin(2);
    builder.append("**Top margin:2mm*\n".getBytes());
    builder.append(data);
    builder.append(data);
    builder.append(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.appendTopMargin(6);
    builder.append("**Top margin:6mm*\n".getBytes());
    builder.append(data);
    builder.append(data);
    builder.append(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.appendTopMargin(11); // Default
    builder.append("**Top margin:11mm*\n".getBytes());
    builder.append(data);
    builder.append(data);
    builder.append(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* and each *Command Specifications*.

## 8.15 appendEmphasis Method

Select command of the emphasis mode is generated and added to the command buffer.

### Declaration

```
void appendEmphasis(boolean emphasis);
```

```
void appendEmphasis(byte[] data);
```

### Parameter

Name	Description	Object type
emphasis	Emphasis. <ul style="list-style-type: none"> <li>true ... Valid</li> <li>false ... Invalid</li> </ul>	boolean
data	Data (Text and Command).	byte[]

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();
    byte[] dataHalf0 = "Hello ".getBytes();
    byte[] dataHalf1 = "World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append(data);
    builder.appendEmphasis(true);
    builder.append(data);
    builder.append(data);
    builder.appendEmphasis(false);
    builder.append(data);

    builder.appendEmphasis(data);
    builder.append(data);

    builder.appendEmphasis(dataHalf0);
    builder.append(dataHalf1);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.16 appendInvert Method

Select command of the invert mode is generated and added to the command buffer.

### Declaration

```
void appendInvert(boolean invert);
```

```
void appendInvert(byte[] data);
```

### Parameter

Name	Description	Object type
invert	Invert. <ul style="list-style-type: none"> <li>true ... Valid</li> <li>false ... Invalid</li> </ul>	boolean
data	Data (Text and Command).	byte[]

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();
    byte[] dataHalf0 = "Hello ".getBytes();
    byte[] dataHalf1 = "World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append(data);
    builder.appendInvert(true);
    builder.append(data);
    builder.append(data);
    builder.appendInvert(false);
    builder.append(data);

    builder.appendInvert(data);
    builder.append(data);

    builder.appendInvert(dataHalf0);
    builder.append(dataHalf1);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.17 appendMultiple Method

Select command of the multiple mode is generated and added to the command buffer.

### *Declaration*

```
void appendMultiple(int width, int height);
```

```
void appendMultiple(byte[] data, int width, int height);
```

```
void appendMultipleHeight(int height);
```

```
void appendMultipleHeight(byte[] data, int height);
```

```
void appendMultipleWidth(int width);
```

```
void appendMultipleWidth(byte[] data, int width);
```

### *Parameter*

Name	Description	Object type
width	Expanded width.	int
height	Expanded height.	int
data	Data (Text and Command).	byte[]

### *Return value*

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();
    byte[] dataHalf0 = "Hello ".getBytes();
    byte[] dataHalf1 = "World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append(data);

    builder.appendMultiple(2, 2);
    builder.append(data);
    builder.append(data);
    builder.appendMultiple(1, 1);
    builder.append(data);

    builder.appendMultiple(data, 2, 2);
    builder.append(data);

    builder.appendMultiple(dataHalf0, 2, 2);
    builder.append(dataHalf1);

    builder.append(dataHalf0);
    builder.appendMultiple(dataHalf1, 2, 2);

    builder.appendMultipleHeight(2);
    builder.append(data);
    builder.append(data);
    builder.appendMultipleHeight(1);
    builder.append(data);

    builder.appendMultipleHeight(dataHalf0, 2);
    builder.append(dataHalf1);

    builder.append(dataHalf0);
    builder.appendMultipleHeight(dataHalf1, 2);

    builder.appendMultipleWidth(2);
    builder.append(data);
    builder.append(data);
    builder.appendMultipleWidth(1);
    builder.append(data);

    builder.appendMultipleWidth(dataHalf0, 2);
    builder.append(dataHalf1);

    builder.append(dataHalf0);
    builder.appendMultipleWidth(dataHalf1, 2);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.18 appendUnderLine Method

Select command of the under line mode is generated and added to the command buffer.

### Declaration

```
void appendUnderLine(boolean underLine);
```

```
void appendUnderLine(byte[] data);
```

### Parameter

Name	Description	Object type
underLine	Under line. <ul style="list-style-type: none"> <li>true ... Valid</li> <li>false ... Invalid</li> </ul>	boolean
data	Data (Text and Command).	byte[]

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();
    byte[] dataHalf0 = "Hello ".getBytes();
    byte[] dataHalf1 = "World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append(data);

    builder.appendUnderLine(true);
    builder.append(data);
    builder.append(data);
    builder.appendUnderLine(false);
    builder.append(data);

    builder.appendUnderLine(data);
    builder.append(data);

    builder.appendUnderLine(dataHalf0);
    builder.append(dataHalf1);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.19 appendLogo Method

Print command of the logo is generated and added to the command buffer.

### Declaration

```
void appendLogo(LogoSize size, int number);
```

### Parameter

Name	Description	Object type
number	Logo size. <ul style="list-style-type: none"> <li>Normal ... Normal.</li> <li>DoubleWidth ... Double Width.</li> <li>DoubleHeight ... Double Height.</li> <li>DoubleWidthDoubleHeight ... Double Width / Height.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.LogoSize
number	Logo number.	int

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendLogo(LogoSize.Normal, 1);

    builder.appendLogo(LogoSize.DoubleWidth, 1);

    builder.appendLogo(LogoSize.DoubleHeight, 1);

    builder.appendLogo(LogoSize.DoubleWidthDoubleHeight, 1);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* and each *Command Specifications*.



## 8.20 appendAbsolutePosition Method

Absolute position command is generated and added to the command buffer.

### Declaration

```
void appendAbsolutePosition(int position);
```

```
void appendAbsolutePosition(byte[] data, int position);
```

### Parameter

Name	Description	Object type
position	Absolute position. (Units : Dots)	int
data	Data (Text and Command).	byte[]

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append(data);

    builder.appendAbsolutePosition(40);
    builder.append(data);
    builder.append(data);

    builder.appendAbsolutePosition(data, 40);
    builder.append(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.21 appendAlignment Method

Alignment command is generated and added to the command buffer.

### Declaration

```
void appendAlignment(AlignmentPosition position);
```

```
void appendAlignment(byte[] data, AlignmentPosition position);
```

### Parameter

Name	Description	Object type
position	Alignment position. <ul style="list-style-type: none"> <li>Left ... Left alignment.</li> <li>Center ... Center alignment.</li> <li>Right ... Right alignment.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.AlignmentPosition
data	Data (Text and Command).	byte[]

### Return value

Description	Object type
-	-

### 1. Notes

“appendAlignment” cannot be used with “appendBitmap”.

Therefore, please use “appendBitmapWithAlignment” if you would like to adjust bitmap position.

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append(data);

    builder.appendAlignment(AlignmentPosition.Right);
    builder.append(data);
    builder.append(data);
    builder.appendAlignment(AlignmentPosition.Left);
    builder.append(data);
    builder.append(data);

    builder.appendAlignment(data, AlignmentPosition.Right);
    builder.append(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.22 appendHorizontalTabPosition Method

Horizontal tab set/clear command is generated and added to the command buffer.

### Declaration

```
void appendHorizontalTabPosition(int[] positions);
```

### Parameter

Name	Description	Object type
position	Array of horizontal tab positions (Units: ANK character pitch)  Specifying null or empty array deletes all currently set horizontal tab positions.	int[]

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createHorizontalTabData(Emulation emulation) {
    byte[] data1 = "QTY\ITEM\TOTAL\n".getBytes();
    byte[] data2 = "1\tApple\t1.50\n".getBytes();
    byte[] data3 = "2\tOrange\t2.00\n".getBytes();
    byte[] data4 = "5\tBanana\t3.00\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendHorizontalTabPosition(new int[] {5, 27});

    builder.append("**Tab Position:5, 27*\n".getBytes());
    builder.append(data1);
    builder.append(data2);
    builder.append(data3);
    builder.append(data4);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.23 appendCutPaper Method

Paper cut command is generated and added to the command buffer.

### Declaration

```
void appendCutPaper(CutPaperAction action);
```

### Parameter

Name	Description	Object type
action	Paper cut action. <ul style="list-style-type: none"> <li>FullCut ... Full Cut.</li> <li>PartialCut ... Partial Cut.</li> <li>FullCutWithFeed ... Full Cut with Feed.</li> <li>PartialCutWithFeed ... Partial Cut with Feed.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.CutPaperAction

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append(data);
    builder.append(data);
    builder.append(data);
    builder.append(data);
    builder.append(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.24 appendPeripheral Method

Cash drawer command is generated and added to the command buffer.

### Declaration

```
void appendPeripheral(PeripheralChannel channel);
```

```
void appendPeripheral(PeripheralChannel channel, int time);
```

### Parameter

Name	Description	Object type
channel	Cash drawer channel. <ul style="list-style-type: none"> <li>No1 ... Channel1.</li> <li>No2 ... Channel2.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.PeripheralChannel
time	Drive time. (Units : mSec) * Peripheral channel1 only.	int

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendPeripheral(PeripheralChannel.No1);
    builder.appendPeripheral(PeripheralChannel.No2);
    builder.appendPeripheral(PeripheralChannel.No1, 2000);
    builder.appendPeripheral(PeripheralChannel.No2, 2000);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.25 appendSound Method

Sound/Buzzer command is generated and added to the command buffer.

### Declaration

```
void appendSound(SoundChannel channel);
```

```
void appendSound(SoundChannel channel, int repeat);
```

```
void appendSound(SoundChannel channel, int repeat, int driveTime, int delayTime);
```

### Parameter

Name	Description	Object type
channel	Sound/Buzzer channel. <ul style="list-style-type: none"> <li>No1 ... Channel1.</li> <li>No2 ... Channel2.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.SoundChannel
repeat	Repeat count.	int
driveTime	Drive time. (Units : mSec)	int
delayTime	Delay time. (Units : mSec)	int

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendSound(SoundChannel.No1);
    builder.appendSound(SoundChannel.No2);
    builder.appendSound(SoundChannel.No1, 3);
    builder.appendSound(SoundChannel.No2, 3);
    builder.appendSound(SoundChannel.No1, 1, 1000, 1000);
    builder.appendSound(SoundChannel.No2, 1, 1000, 1000);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* and each *Command Specifications*.

## 8.26 appendBarcode Method

Print command of the barcode is generated and added to the command buffer.

### Declaration

```
void appendBarcode(byte[] data, BarcodeSymbology symbology, BarcodeWidth width, int height,
boolean hri);
```

### Parameter

Name	Description	Object type
data	Barcode data.	byte[]
symbology	Barcode symbology. <ul style="list-style-type: none"> <li>• UPCE ... UPC-E.</li> <li>• UPCA ... UPC-A.</li> <li>• JAN8 ... JAN/EAN8.</li> <li>• JAN13 ... JAN/EAN13.</li> <li>• Code39 ... Code39.</li> <li>• ITF ... ITF.</li> <li>• Code128 ... Code128.</li> <li>• Code93 ... Code93.</li> <li>• <del>Codabar ... Codabar.</del></li> <li>• NW7 ... NW7.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.BarcodeSymbology
width	Barcode width. <ul style="list-style-type: none"> <li>• Mode1 ... Mode1.</li> <li>• Mode2 ... Mode2.</li> <li>• Mode3 ... Mode3.</li> <li>• Mode4 ... Mode4.</li> <li>• Mode5 ... Mode5.</li> <li>• Mode6 ... Mode6.</li> <li>• Mode7 ... Mode7.</li> <li>• Mode8 ... Mode8.</li> <li>• Mode9 ... Mode9.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.BarcodeWidth
height	Barcode height. (Units : Dots)	int
hri	Under-bar characters. <ul style="list-style-type: none"> <li>• true ... Valid</li> <li>• false ... Invalid</li> </ul>	boolean

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {  
    byte[] dataCode128 = "{B0123456789".getBytes();  
  
    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);  
  
    builder.beginDocument();  
  
    builder.appendBarcode(dataCode128, BarcodeSymbology.Code128, BarcodeWidth.Mode1, 40, true);  
    builder.appendUnitFeed(32);  
  
    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);  
  
    builder.endDocument();  
  
    return builder.getCommands();  
}
```

*Refer to `ApiFunctions.java` and each Command Specifications.*



## 8.27 appendBarcodeWithAbsolutePosition Method

Print command of the absolute position barcode is generated and added to the command buffer.

### Declaration

```
void appendBarcodeWithAbsolutePosition(byte[] data, BarcodeSymbology symbology,
BarcodeWidth width, int height, boolean hri, int position);
```

### Parameter

Name	Description	Object type
position	Absolute position. (Units : Dots)	int
data	Barcode data.	byte[]
symbology	Barcode symbology. <ul style="list-style-type: none"> <li>• UPCE ... UPC-E.</li> <li>• UPCA ... UPC-A.</li> <li>• JAN8 ... JAN/EAN8.</li> <li>• JAN13 ... JAN/EAN13.</li> <li>• Code39 ... Code39.</li> <li>• ITF ... ITF.</li> <li>• Code128 ... Code128.</li> <li>• Code93 ... Code93.</li> <li>• <del>Codabar ... Codabar.</del></li> <li>• NW7 ... NW7.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.BarcodeSymbology
width	Barcode width. <ul style="list-style-type: none"> <li>• Mode1 ... Mode1.</li> <li>• Mode2 ... Mode2.</li> <li>• Mode3 ... Mode3.</li> <li>• Mode4 ... Mode4.</li> <li>• Mode5 ... Mode5.</li> <li>• Mode6 ... Mode6.</li> <li>• Mode7 ... Mode7.</li> <li>• Mode8 ... Mode8.</li> <li>• Mode9 ... Mode9.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.BarcodeWidth
height	Barcode height. (Units : Dots)	int
hri	Under-bar characters. <ul style="list-style-type: none"> <li>• true ... Valid</li> <li>• false ... Invalid</li> </ul>	boolean

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {  
    byte[] dataCode128 = "B0123456789".getBytes();  
  
    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);  
  
    builder.beginDocument();  
  
    builder.appendBarcodeWithAbsolutePosition(dataCode128, BarcodeSymbology.Code128,  
BarcodeWidth.Mode1, 40, true, 40);  
    builder.appendUnitFeed(32);  
  
    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);  
  
    builder.endDocument();  
  
    return builder.getCommands();  
}
```

*Refer to ApiFunctions.java and each Command Specifications.*

## 8.28 appendBarcodeWithAlignment Method

Print command of the alignment barcode is generated and added to the command buffer.

### Declaration

```
void appendBarcodeWithAlignment(byte[] data, BarcodeSymbology symbology, BarcodeWidth width, int height, boolean hri, AlignmentPosition position);
```

### Parameter

Name	Description	Object type
position	Alignment position. <ul style="list-style-type: none"> <li>Left ... Left alignment.</li> <li>Center ... Center alignment.</li> <li>Right ... Right alignment.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.AlignmentPosition
data	Barcode data.	byte[]
symbology	Barcode symbology. <ul style="list-style-type: none"> <li>UPCE ... UPC-E.</li> <li>UPCA ... UPC-A.</li> <li>JAN8 ... JAN/EAN8.</li> <li>JAN13 ... JAN/EAN13.</li> <li>Code39 ... Code39.</li> <li>ITF ... ITF.</li> <li>Code128 ... Code128.</li> <li>Code93 ... Code93.</li> <li><del>Codabar ... Codabar.</del></li> <li>NW7 ... NW7.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.BarcodeSymbology
width	Barcode width. <ul style="list-style-type: none"> <li>Mode1 ... Mode1.</li> <li>Mode2 ... Mode2.</li> <li>Mode3 ... Mode3.</li> <li>Mode4 ... Mode4.</li> <li>Mode5 ... Mode5.</li> <li>Mode6 ... Mode6.</li> <li>Mode7 ... Mode7.</li> <li>Mode8 ... Mode8.</li> <li>Mode9 ... Mode9.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.BarcodeWidth
height	Barcode height. (Units : Dots)	int
hri	Under-bar characters. <ul style="list-style-type: none"> <li>true... Valid</li> <li>false ... Invalid</li> </ul>	boolean

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] dataCode128 = "{B0123456789".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendBarcodeWithAlignment(dataCode128, BarcodeSymbology.Code128, BarcodeWidth.Mode1, 40,
true, AlignmentPosition.Center);
    builder.appendUnitFeed(32);

    builder.appendBarcodeWithAlignment(dataCode128, BarcodeSymbology.Code128, BarcodeWidth.Mode1, 40,
true, AlignmentPosition.Right);
    builder.appendUnitFeed(32);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

*Refer to `ApiFunctions.java` and each Command Specifications.*

## 8.29 appendPdf417 Method

Print command of the PDF417 is generated and added to the command buffer.

### Declaration

```
void appendPdf417(byte[] data, int line, int column, Pdf417Level level, int module, int aspect);
```

### Parameter

Name	Description	Object type
data	PDF417 data.	byte[]
line	Number of lines.	int
column	Number of columns.	int
level	PDF417 ECC (security level). <ul style="list-style-type: none"> <li>ECC0 ... Level0.</li> <li>ECC1 ... Level1.</li> <li>ECC2 ... Level2.</li> <li>ECC3 ... Level3.</li> <li>ECC4 ... Level4.</li> <li>ECC5 ... Level5.</li> <li>ECC6 ... Level6.</li> <li>ECC7 ... Level7.</li> <li>ECC8 ... Level8.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.Pdf417Level
module	Module X direction size.	int
aspect	Module aspect ratio.	int

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendPdf417(data, 0, 1, Pdf417Level.ECC0, 2, 2);
    builder.appendUnitFeed(32);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* and each Command Specifications.

### 8.30 appendPdf417WithAbsolutePosition Method

Print command of the absolute position PDF417 is generated and added to the command buffer.

#### Declaration

```
void appendPdf417WithAbsolutePosition(byte[] data, int line, int column, Pdf417Level level, int module, int aspect, int position);
```

#### Parameter

Name	Description	Object type
position	Absolute position. (Units : Dots)	int
data	PDF417 data.	byte[]
line	Number of lines.	int
column	Number of columns.	int
level	PDF417 ECC (security level). <ul style="list-style-type: none"> <li>ECC0 ... Level0.</li> <li>ECC1 ... Level1.</li> <li>ECC2 ... Level2.</li> <li>ECC3 ... Level3.</li> <li>ECC4 ... Level4.</li> <li>ECC5 ... Level5.</li> <li>ECC6 ... Level6.</li> <li>ECC7 ... Level7.</li> <li>ECC8 ... Level8.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.Pdf417Level
module	Module X direction size.	int
aspect	Module aspect ratio.	int

#### Return value

Description	Object type
-	-

#### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendPdf417WithAbsolutePosition(data, 0, 1, Pdf417Level.ECC0, 2, 2, 40);
    builder.appendUnitFeed(32);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.31 appendPdf417WithAlignment Method

Print command of the alignment PDF417 is generated and added to the command buffer.

### Declaration

```
void appendPdf417WithAlignment(byte[] data, int line, int column, Pdf417Level level, int module, int aspect, AlignmentPosition position);
```

### Parameter

Name	Description	Object type
position	Alignment position. <ul style="list-style-type: none"> <li>Left ... Left alignment.</li> <li>Center ... Center alignment.</li> <li>Right ... Right alignment.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.AlignmentPosition
data	PDF417 data.	byte[]
line	Number of lines.	int
column	Number of columns.	int
level	PDF417 ECC (security level). <ul style="list-style-type: none"> <li>ECC0 ... Level0.</li> <li>ECC1 ... Level1.</li> <li>ECC2 ... Level2.</li> <li>ECC3 ... Level3.</li> <li>ECC4 ... Level4.</li> <li>ECC5 ... Level5.</li> <li>ECC6 ... Level6.</li> <li>ECC7 ... Level7.</li> <li>ECC8 ... Level8.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.Pdf417Level
module	Module X direction size.	int
aspect	Module aspect ratio.	int

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {  
    byte[] data = "Hello World.".getBytes();  
  
    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);  
  
    builder.beginDocument();  
  
    builder.appendPdf417WithAlignment(data, 0, 1, Pdf417Level.ECC0, 2, 2, AlignmentPosition.Center);  
    builder.appendUnitFeed(32);  
  
    builder.appendPdf417WithAlignment(data, 0, 1, Pdf417Level.ECC0, 2, 2, AlignmentPosition.Right);  
    builder.appendUnitFeed(32);  
  
    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);  
  
    builder.endDocument();  
  
    return builder.getCommands();  
}
```

*Refer to `ApiFunctions.java` and each Command Specifications.*



## 8.32 appendQrCode Method

Print command of the QR code is generated and added to the command buffer.

### Declaration

```
void appendQrCode(byte[] data, QrCodeModel model, QrCodeLevel level, int cell);
```

### Parameter

Name	Description	Object type
data	QR code data.	byte[]
model	QR code model. • No1 ... Model1. • No2 ... Model2.	com.starmicronics.starioextension.ICommandBuilder.QrCodeModel
level	QR code mistake correction level. • L ... Level L. • M ... Level M. • Q ... Level Q. • H ... Level H.	com.starmicronics.starioextension.ICommandBuilder.QrCodeLevel
cell	QR code cell size.	int

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendQrCode(data, QrCodeModel.No2, QrCodeLevel.L, 4);
    builder.appendUnitFeed(32);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* and each Command Specifications.

### 8.33 appendQrCodeWithAbsolutePosition Method

Print command of the absolute position QR code is generated and added to the command buffer.

#### Declaration

```
void appendQrCodeWithAbsolutePosition(byte[] data, QrCodeModel model, QrCodeLevel level, int cell, int position);
```

#### Parameter

Name	Description	Object type
position	Absolute position. (Units : Dots)	int
data	QR code data.	byte[]
model	QR code model. • No1 ... Model1. • No2 ... Model2.	com.starmicronics.starioextension.ICommandBuilder.QrCodeModel
level	QR code mistake correction level. • L ... Level L. • M ... Level M. • Q ... Level Q. • H ... Level H.	com.starmicronics.starioextension.ICommandBuilder.QrCodeLevel
cell	QR code cell size.	int

#### Return value

Description	Object type
-	-

#### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendQrCodeWithAbsolutePosition(data, QrCodeModel.No2, QrCodeLevel.L, 4, 40);
    builder.appendUnitFeed(32);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.34 appendQrCodeWithAlignment Method

Print command of the alignment QR code is generated and added to the command buffer.

### Declaration

```
void appendQrCodeWithAlignment(byte[] data, QrCodeModel model, QrCodeLevel level, int cell, AlignmentPosition position);
```

### Parameter

Name	Description	Object type
position	Alignment position. <ul style="list-style-type: none"> <li>Left ... Left alignment.</li> <li>Center ... Center alignment.</li> <li>Right ... Right alignment.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.AlignmentPosition
data	QR code data.	byte[]
model	QR code model. <ul style="list-style-type: none"> <li>No1 ... Model1.</li> <li>No2 ... Model2.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.QrCodeModel
level	QR code mistake correction level. <ul style="list-style-type: none"> <li>L ... Level L.</li> <li>M ... Level M.</li> <li>Q ... Level Q.</li> <li>H ... Level H.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.QrCodeLevel
cell	QR code cell size.	int

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendQrCodeWithAlignment(data, QrCodeModel.No2, QrCodeLevel.L, 4, AlignmentPosition.Center);
    builder.appendUnitFeed(32);

    builder.appendQrCodeWithAlignment(data, QrCodeModel.No2, QrCodeLevel.L, 4, AlignmentPosition.Right);
    builder.appendUnitFeed(32);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.35 appendBitmap Method

Print command of the bitmap is generated and added to the command buffer.

### Declaration

```
void appendBitmap(Bitmap bitmap, boolean diffusion, int width, boolean bothScale,
BitmapConverterRotation rotation);
```

```
void appendBitmap(Bitmap bitmap, boolean diffusion, BitmapConverterRotation rotation);
```

```
void appendBitmap(Bitmap bitmap, boolean diffusion, int width, boolean bothScale);
```

```
void appendBitmap(Bitmap bitmap, boolean diffusion);
```

### Parameter

Name	Description	Object type
bitmap	Source bitmap object.	android.graphics.Bitmap
diffusion	Random dither. <ul style="list-style-type: none"> <li>true ... Valid</li> <li>false ... Invalid</li> </ul>	boolean
width	Bitmap width after conversion. (Units : Dots)	int
bothScale	Height is changed according to the conversion rate of the width property. <ul style="list-style-type: none"> <li>true ... Valid.</li> <li>false ... Invalid.</li> </ul>	boolean
rotation	Rotation. <ul style="list-style-type: none"> <li>Normal ... Rotated 0.</li> <li>Right90 ... Rotated 90.</li> <li>Left90 ... Rotated 270.</li> <li>Rotate180 ... Rotated 180.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.BitmapConverterRotation

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation, int width, Context context) {
    Bitmap starLogoBitmap = BitmapFactory.decodeResource(context.getResources(), R.drawable.star_logo_image);

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append("\n*Normal*\n".getBytes());
    builder.appendBitmap(starLogoBitmap, true);

    builder.append("\n*width:Full, bothScale:true*\n".getBytes());
    builder.appendBitmap(starLogoBitmap, true, width, true);
    builder.append("\n*width:Full, bothScale:false*\n".getBytes());
    builder.appendBitmap(starLogoBitmap, true, width, false);

    builder.append("\n*Rotate180*\n".getBytes());
    builder.appendBitmap(starLogoBitmap, true, BitmapConverterRotation.Rotate180);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java* .

## 8.36 appendBitmapWithAbsolutePosition Method

Print command of the absolute position bitmap is generated and added to the command buffer.

### Declaration

```
void appendBitmapWithAbsolutePosition(Bitmap bitmap, boolean diffusion, int width, boolean bothScale, BitmapConverterRotation rotation, int position);
```

```
void appendBitmapWithAbsolutePosition(Bitmap bitmap, boolean diffusion, BitmapConverterRotation rotation, int position);
```

```
void appendBitmapWithAbsolutePosition(Bitmap bitmap, boolean diffusion, int width, boolean bothScale, int position);
```

```
void appendBitmapWithAbsolutePosition(Bitmap bitmap, boolean diffusion, int position);
```

### Parameter

Name	Description	Object type
position	Absolute position. (Units : Dots)	int
bitmap	Source bitmap object.	android.graphics.Bitmap
diffusion	Random dither. <ul style="list-style-type: none"> <li>true ... Valid</li> <li>false ... Invalid</li> </ul>	boolean
width	Bitmap width after conversion. (Units : Dots)	int
bothScale	Height is changed according to the conversion rate of the width property. <ul style="list-style-type: none"> <li>true ... Valid.</li> <li>false ... Invalid.</li> </ul>	boolean
rotation	Rotation. <ul style="list-style-type: none"> <li>Normal ... Rotated 0.</li> <li>Right90 ... Rotated 90.</li> <li>Left90 ... Rotated 270.</li> <li>Rotate180 ... Rotated 180.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.BitmapConverterRotation

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation, int width, Context context) {
    Bitmap starLogoBitmap = BitmapFactory.decodeResource(context.getResources(), R.drawable.star_logo_image);

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append("\n*Normal, AbsolutePosition:40*\n".getBytes());
    builder.appendBitmapWithAbsolutePosition(starLogoBitmap, true, 40);

    builder.append("\n*width:Full, bothScale:true, AbsolutePosition:40*\n".getBytes());
    builder.appendBitmap(starLogoBitmap, true, width, true, 40);
    builder.append("\n*width:Full, bothScale:false, AbsolutePosition:40*\n".getBytes());
    builder.appendBitmap(starLogoBitmap, true, width, false, 40);

    builder.append("\n*Rotate180, AbsolutePosition:40*\n".getBytes());
    builder.appendBitmapWithAbsolutePosition(starLogoBitmap, true, BitmapConverterRotation.Rotate180, 40);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.37 appendBitmapWithAlignment Method

Print command of the alignment bitmap is generated and added to the command buffer.

### Declaration

```
void appendBitmapWithAlignment(Bitmap bitmap, boolean diffusion, int width, boolean bothScale,
BitmapConverterRotation rotation, AlignmentPosition position);
```

```
void appendBitmapWithAlignment(Bitmap bitmap, boolean diffusion, BitmapConverterRotation
rotation, AlignmentPosition position);
```

```
void appendBitmapWithAlignment(Bitmap bitmap, boolean diffusion, int width, boolean bothScale,
AlignmentPosition position);
```

```
void appendBitmapWithAlignment(Bitmap bitmap, boolean diffusion, AlignmentPosition position);
```

### Parameter

Name	Description	Object type
position	Alignment position. <ul style="list-style-type: none"> <li>Left ... Left alignment.</li> <li>Center ... Center alignment.</li> <li>Right ... Right alignment.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.AlignmentPosition
bitmap	Source bitmap object.	android.graphics.Bitmap
diffusion	Random dither. <ul style="list-style-type: none"> <li>true ... Valid</li> <li>false ... Invalid</li> </ul>	boolean
Width	Bitmap width after conversion. (Units : Dots)	int
bothScale	Height is changed according to the conversion rate of the width property. <ul style="list-style-type: none"> <li>true ... Valid.</li> <li>false ... Invalid.</li> </ul>	boolean
rotation	Rotation. <ul style="list-style-type: none"> <li>Normal ... Rotated 0.</li> <li>Right90 ... Rotated 90.</li> <li>Left90 ... Rotated 270.</li> <li>Rotate180 ... Rotated 180.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.BitmapConverterRotation

### Return value

Description	Object type
-	-



### Example

```
public static byte[] createData(Emulation emulation, int width, Context context) {
    Bitmap starLogoBitmap = BitmapFactory.decodeResource(context.getResources(), R.drawable.star_logo_image);

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append("\n*Normal, Alignment:Center*\n".getBytes());
    builder.appendBitmapWithAlignment(starLogoBitmap, true, AlignmentPosition.Center);

    builder.append("\n*width:Full, bothScale:true, Alignment:Center*\n".getBytes());
    builder.appendBitmapWithAlignment(starLogoBitmap, true, width, true, AlignmentPosition.Center);
    builder.append("\n*width:Full, bothScale:false, Alignment:Center*\n".getBytes());
    builder.appendBitmapWithAlignment(starLogoBitmap, true, width, false, AlignmentPosition.Center);

    builder.append("\n*Rotate180, Alignment:Center*\n".getBytes());
    builder.appendBitmapWithAlignment(starLogoBitmap, true, BitmapConverterRotation.Rotate180, AlignmentPosition.Center);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.38 appendBlackMark Method

Black mark command is generated and added to the command buffer.

### Declaration

```
void appendBlackMark(BlackMarkType type);
```

### Parameter

Name	Description	Object type
type	Black mark. <ul style="list-style-type: none"> <li>Invalid ... Black mark invalid.</li> <li>Valid ... Black mark valid.</li> <li>ValidWithDetection ... Black mark valid with detection.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.BlackMarkType

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendBlackMark(BlackMarkType.Valid);

    builder.append(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    // builder.appendBlackMark(BlackMarkType.Invalid);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.39 beginPageMode Method

Begin page mode command is generated and added to the command buffer.

### Declaration

```
void beginPageMode(Rect rect, BitmapConverterRotation rotation);
```

### Parameter

Name	Description	Object type
rect	Location and size. (Units : Dots)	android.graphics.Rect
rotation	Print direction. <ul style="list-style-type: none"> <li>Normal ... Rotated 0.</li> <li>Right90 ... Rotated 90.</li> <li>Left90 ... Rotated 270.</li> <li>Rotate180 ... Rotated 180.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.BitmapConverterRotation

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation, int width) {
    byte[] data = "Hello World.\n".getBytes();

    int left = 0;
    int top = 0;
    int height = 30 * 8;    // 30mm!!!

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append("\n*Rotate180 Text*\n".getBytes());

    Rect rect = new Rect(left, top, left + width, top + height);

    builder.beginPageMode(rect, BitmapConverterRotation.Rotate180);

    builder.appendPageModeVerticalAbsolutePosition(height / 2);

    builder.appendAbsolutePosition(data, width / 2);

    builder.endPageMode();

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.40 endPageMode Method

End page mode command is generated and added to the command buffer.

### Declaration

```
void endPageMode();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation, int width) {
    byte[] data = "Hello World.\n".getBytes();

    int left = 0;
    int top = 0;
    int height = 30 * 8;    // 30mm!!!

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append("\n*Rotate180 Text*\n".getBytes());

    Rect rect = new Rect(left, top, left + width, top + height);

    builder.beginPageMode(rect, BitmapConverterRotation.Rotate180);

    builder.appendPageModeVerticalAbsolutePosition(height / 2);

    builder.appendAbsolutePosition(data, width / 2);

    builder.endPageMode();

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.41 appendPageModeVerticalAbsolutePosition Method

Vertical absolute position in page mode command is generated and added to the command buffer.

### Declaration

```
void appendPageModeVerticalAbsolutePosition(int position);
```

### Parameter

Name	Description	Object type
position	Vertical absolute position in page mode. (Units : Dots)	int

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation, int width) {
    byte[] data = "Hello World.\n".getBytes();

    int left = 0;
    int top = 0;
    int height = 30 * 8;    // 30mm!!!

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append("\n*Rotate180 Text*\n".getBytes());

    Rect rect = new Rect(left, top, left + width, top + height);

    builder.beginPageMode(rect, BitmapConverterRotation.Normal);

    builder.appendPageModeVerticalAbsolutePosition(height / 2);

    builder.appendAbsolutePosition(data, width / 2);

    builder.endPageMode();

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.42 appendPageModeRotation Method

Print direction in page mode command is generated and added to the command buffer.

### Declaration

```
void appendPageModeRotation(BitmapConverterRotation rotation);
```

### Parameter

Name	Description	Object type
rotation	Print direction. <ul style="list-style-type: none"> <li>• Normal ... Rotated 0.</li> <li>• Right90 ... Rotated 90.</li> <li>• Left90 ... Rotated 270.</li> <li>• Rotate180 ... Rotated 180.</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.BitmapConverterRotation

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createData(Emulation emulation, int width) {
    byte[] data = "Hello World.\n".getBytes();

    int left = 0;
    int top = 0;
    int height = 30 * 8;    // 30mm!!!

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append("\n*Mixed Text*\n".getBytes());

    Rect rect = new Rect(left, top, left + width, top + height);

    builder.beginPageMode(rect, BitmapConverterRotation.Normal);

    builder.appendPageModeVerticalAbsolutePosition(height / 2);

    builder.appendAbsolutePosition(data, width / 2);

    builder.appendPageModeRotation(BitmapConverterRotation.Rotate180);

    builder.appendPageModeVerticalAbsolutePosition(height / 2);

    builder.appendAbsolutePosition(data, width / 2);

    builder.endPageMode();

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.43 appendPrintableArea Method

Set command of the printable area is generated and added to the command buffer.

### Declaration

```
void appendPrintableArea(PrintableAreaType type);
```

### Parameter

Name	Description	Object type
type	Printable area <ul style="list-style-type: none"> <li>• Standard ...Standard type</li> <li>• Type1 ...Type1</li> <li>• Type2 ...Type2</li> <li>• Type3 ...Type3</li> <li>• Type4 ...Type4</li> </ul>	com.starmicronics.starioextension.ICommandBuilder.PrintableAreaType

### Return value

Description	Object type
-	-

The relationship between the specified PrintableAreaType and the print area to be set is the following.

PrintableAreaType	mC-Print2	mC-Print3	mPOP	FVP10	TSP100	TSP650II	TSP700II	TSP800II	SM-S240i	SM-S220i	SM-S230i	SM-T300i/T300	SM-T400i	BSC10	SM-S240i-StarPRNT	SM-S220i-StarPRNT	SM-S230i-StarPRNT	SM-T300i/T300-StarPRNT	SM-T400i-StarPRNT	SM-L200	SM-L300	SP700
Standard	48	72 *1	48	72 *1	72 *1	72 *1	72 *1	104 *2	-	-	-	-	-	64 *1*3	-	-	-	-	-	-	72 *1	63
Type1	54	-	54	52.5	51	-	52.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48
Type2	-	48	-	-	-	-	80 *1	72	-	-	-	-	-	-	-	-	-	-	-	-	-	60
Type3	50.8	50.8	50.8	50.8	-	50.8	50.8	-	-	-	-	-	-	45 *3	-	-	-	-	-	-	50.8	45
Type4	-	-	-	52	-	-	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57

※Units : millimeter

-: Ignored

\*1: When 2-inch paper is used, do not set a print area with width 3 inches.

\*2: When 3-inch paper is used, do not set a print area with width 4 inches.

\*3: When "Maximum number of lines" is set for the number of memory switch print lines, 72 mm is set for Standard and 50.8 mm is set for Type 3.  
(Bit 4 of memory switch 4 is set to 1.)



### Example

```
public static byte[] createPrintableAreaData(Emulation emulation, PrintableAreaType type, Context context) {
    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    Bitmap printableAreaImage = BitmapFactory.decodeResource(context.getResources(),
R.drawable.printable_area_image);

    byte[] data1 = "123456789".getBytes();
    byte[] data2 = "0".getBytes();

    builder.beginDocument();

    builder.appendPrintableArea(type);

    switch (type) {
//    case Standard:
    default:
        builder.append("**Standard*\n".getBytes());
        break;
    case Type1:
        builder.append("**Type1*\n".getBytes());
        break;
    case Type2:
        builder.append("**Type2*\n".getBytes());
        break;
    case Type3:
        builder.append("**Type3*\n".getBytes());
        break;
    case Type4:
        builder.append("**Type4*\n".getBytes());
        break;
    }

    builder.appendBitmap(printableAreaImage, true);

    builder.append(data1);
    builder.appendInvert(data2);
    builder.append(data1);
    builder.appendInvert(data2);
    builder.append(data1);
    builder.appendInvert(data2);
    builder.append(data1);
    builder.appendInvert(data2);
    builder.append(data1);
    builder.appendInvert(data2);
    builder.append(data1);
    builder.appendInvert(data2);
    builder.append(data1);
    builder.appendInvert(data2);
    builder.append(data1);
    builder.appendInvert(data2);
    builder.append(data1);
    builder.appendInvert(data2);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.44 getCommands Method

Gets the command buffer.

### Declaration

```
byte[] getCommands();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
The command buffer.	byte[]

### Example

```
public static byte[] createData(Emulation emulation) {
    byte[] data = "Hello World.\n".getBytes();

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.append(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *ApiFunctions.java*.

## 8.45 InitializationType Constants

Initialization constants.

### Declaration

```
enum InitializationType {
    Command
// Reset,
// ResetWithPrint
}
```

### Constants

Name	Description
Command	Command initialization.
Reset	Reset printer.
ResetWithPrint	Reset printer (execute self print).

Refer to *ApiFunctions.java*.

## 8.46 FontStyleType Constants

Font style constants.

### Declaration

```
enum FontStyleType {
    A,
    B
}
```

### Constants

Name	Description
A	Font-A (12 x 24 dots) / Specify 7 x 9 font (half dots)
B	Font-B (9 x 24 dots) / Specify 5 x 9 font (2P-1)

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.47 CodePageType Constants

Code Page constants.

### *Declaration*

```
enum CodePageType {  
    CP437,  
    CP737,  
    CP772,  
    CP774,  
    CP851,  
    CP852,  
    CP855,  
    CP857,  
    CP858,  
    CP860,  
    CP861,  
    CP862,  
    CP863,  
    CP864,  
    CP865,  
    CP866,  
    CP869,  
    CP874,  
    CP928,  
    CP932,  
    CP998,  
    CP999,  
    CP1001,  
    CP1250,  
    CP1251,  
    CP1252,  
    CP2001,  
    CP3001,  
    CP3002,  
    CP3011,  
    CP3012,  
    CP3021,  
    CP3041,  
    CP3840,  
    CP3841,  
    CP3843,  
    CP3844,  
    CP3845,  
    CP3846,  
    CP3847,  
    CP3848,  
    UTF8,  
    Blank  
}
```

## Constants

Name	Description
CP437	CodePage437 (USA, Std. Europe).
CP737	Codepage 737 (Greek).
CP772	Codepage 772 (Lithuanian).
CP774	Codepage 774 (Lithuanian).
CP851	Codepage 851 (Greek).
CP852	Codepage 852 (Latin-2).
CP855	Codepage 855 (Cyrillic Bulgarian).
CP857	Codepage 857 (Turkey).
CP858	Codepage 858 (Multilingual).
CP860	Codepage 860 (Portuguese).
CP861	Codepage 861 (Icelandic).
CP862	Codepage 862 (Israel (Hebrew)).
CP863	Codepage 863 (Canadian French).
CP864	Codepage 864 (Arabic).
CP865	Codepage 865 (Nordic).
CP866	Codepage 866 (Cyrillic Russian).
CP869	Codepage 869 (Greek).
CP874	Codepage 874 (Thai).
CP928	Codepage 928 (Greek).
CP932	Katakana.
CP998	Normal.
CP999	Codepage 1252 (Windows Latin-1).
CP1001	Codepage 1001 (Arabic).
CP1250	Codepage 1250 (Windows Latin-2).
CP1251	Codepage 1251 (Windows Cyrillic).
CP1252	Codepage 1252 (Windows Latin-1).
CP2001	Codepage 2001 (Lithuanian-KBL).
CP3001	Codepage 3001 (Estonian-1).
CP3002	Codepage 3002 (Estonian-2).
CP3011	Codepage 3011 (Latvian-1).
CP3012	Codepage 3012 (Latvian-2).
CP3021	Codepage 3021 (Bulgarian).
CP3041	Codepage 3041 (Maltese).
CP3840	Codepage 3840 (IBM-Russian).
CP3841	Codepage 3841 (Gost).
CP3843	Codepage 3843 (Polish).
CP3844	Codepage 3844 (CS2).
CP3845	Codepage 3845 (Hungarian).
CP3846	Codepage 3846 (Turkish).
CP3847	Codepage 3847 (Brazil-ABNT).
CP3848	Codepage 3848 (Brazil-ABICOMP).
UTF8	UTF-8.
Blank	User Setting Blank Code Page.

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.48 InternationalType Constants

International character constants.

### *Declaration*

```
enum InternationalType {
    USA,
    France,
    Germany,
    UK,
    Denmark,
    Sweden,
    Italy,
    Spain,
    Japan,
    Norway,
    Denmark2,
    Spain2,
    LatinAmerica,
    Korea,
    Ireland,
    Legal
}
```

### *Constants*

Name	Description
USA	USA.
France	France.
Germany	Germany.
UK	UK.
Denmark	Denmark.
Sweden	Sweden.
Italy	Italy.
Spain	Spain.
Japan	Japan.
Norway	Norway.
Denmark2	Denmark   .
Spain2	Spain   .
LatinAmerica	Latin America.
Korea	Korea.
Ireland	Ireland.
Legal	Legal.

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.49 LogoSize Constants

Logo size constants.

### Declaration

```
enum LogoSize {
    Normal,
    DoubleWidth,
    DoubleHeight,
    DoubleWidthDoubleHeight
}
```

### Constants

Name	Description
Normal	Normal.
DoubleWidth	Double Width.
DoubleHeight	Double Height.
DoubleWidthDoubleHeight	Double Width / Height.

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.50 AlignmentPosition Constants

Alignment position constants.

### Declaration

```
enum AlignmentPosition {
    Left,
    Center,
    Right
}
```

### Constants

Name	Description
Left	Left alignment.
Center	Center alignment.
Right	Right alignment.

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.51 CutPaperAction Constants

Paper cut constants.

### Declaration

```
enum CutPaperAction {
    FullCut,
    PartialCut,
    FullCutWithFeed,
    PartialCutWithFeed
}
```

### Constants

Name	Description
FullCut	Full Cut.
PartialCut	Partial Cut.
FullCutWithFeed	Full Cut with Feed.
PartialCutWithFeed	Partial Cut with Feed.

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.52 PeripheralChannel Constants

Cash drawer channel constants.

### Declaration

```
enum PeripheralChannel {
    No1,
    No2
}
```

### Constants

Name	Description
No1	Channel1.
No2	Channel2.

Refer to *ApiFunctions.java*.



## 8.53 SoundChannel Constants

Sound/Buzzer channel constants.

### Declaration

```
enum SoundChannel {
    No1,
    No2
}
```

### Constants

Name	Description
No1	Channel1.
No2	Channel2.

Refer to *ApiFunctions.java*.

## 8.54 BarcodeSymbology Constants

Barcode symbology constants.

### Declaration

```
enum BarcodeSymbology {
    UPCE,
    UPCA,
    JAN8,
    JAN13,
    Code39,
    ITF,
    Code128,
    Code93,
    // Codabar,
    NW7
}
```

### Constants

Name	Description
UPCE	UPC-E.
UPCA	UPC-A.
JAN8	JAN/EAN8.
JAN13	JAN/EAN13.
Code39	Code39.
ITF	ITF.
Code128	Code128.
Code93	Code93.
<del>Codabar</del>	<del>Codabar.</del>
NW7	NW7.

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.55 BarcodeWidth Constants

Barcode width constants.

### *Declaration*

```
enum BarcodeWidth {
    Mode1,
    Mode2,
    Mode3,
    Mode4,
    Mode5,
    Mode6,
    Mode7,
    Mode8,
    Mode9
}
```

### *Constants*

Name	Description
Mode1	Mode1.
Mode2	Mode2.
Mode3	Mode3.
Mode4	Mode4.
Mode5	Mode5.
Mode6	Mode6.
Mode7	Mode7.
Mode8	Mode8.
Mode9	Mode9.

*Refer to ApiFunctions.java and each Command Specifications.*

## 8.56 Pdf417Level Constants

PDF417 ECC (security level) constants.

### Declaration

```
enum Pdf417Level {
    ECC0,
    ECC1,
    ECC2,
    ECC3,
    ECC4,
    ECC5,
    ECC6,
    ECC7,
    ECC8
}
```

### Constants

Name	Description
ECC0	Level0.
ECC1	Level1.
ECC2	Level2.
ECC3	Level3.
ECC4	Level4.
ECC5	Level5.
ECC6	Level6.
ECC7	Level7.
ECC8	Level8.

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.57 QrCodeModel Constants

QR code model constants.

### Declaration

```
enum QrCodeModel {
    No1,
    No2
}
```

### Constants

Name	Description
No1	Model1.
No2	Model2.

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.58 QrCodeLevel Constants

QR code mistake correction level constants.

### Declaration

```
enum QrCodeLevel {
    L,
    M,
    Q,
    H
}
```

### Constants

Name	Description
L	Level L.
M	Level M.
Q	Level Q.
H	Level H.

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.59 BitmapConverterRotation Constants

Bitmap rotation constants.

### Declaration

```
enum BitmapConverterRotation {
    Normal,
    Right90,
    Left90,
    Rotate180
}
```

### Constants

Name	Description
Normal	Rotated 0.
Right90	Rotated 90.
Left90	Rotated 270.
Rotate180	Rotated 180.

Refer to *ApiFunctions.java*.

## 8.60 BlackMarkType Constants

Black mark constants.

### Declaration

```
enum BlackMarkType {
    Invalid,
    Valid,
    ValidWithDetection
}
```

### Constants

Name	Description
Invalid	Black mark invalid.
Valid	Black mark valid.
ValidWithDetection	Black mark valid with detection.

Refer to *ApiFunctions.java* and each Command Specifications.

## 8.61 PrintableAreaTypeConstants

Printable are constants.

### 宣言

```
enum PrintableAreaType {
    Standard,
    Type1,
    Type2,
    Type3,
    Type4
}
```

### 定数

名称	説明
Standard	Standard type
Type1	Type1
Type2	Type2
Type3	Type3
Type4	Type4

Refer to *ApiFunctions.java*.

## 9 IDisplayCommandBuilder Interface (starioextension.jar)

An interface to provide functions to generate commands for the customer display control.

### Method

Name	Description
append	Adds data (text or command) to the command buffer.
appendBackSpace	Generates a backspace command, and then adds it to the command buffer.
appendHorizontalTab	Generates a horizontal tab command, and then adds it to the command buffer.
appendLineFeed	Generates a line feed command, and then adds it to the command buffer.
appendCarriageReturn	Generates a carriage-return command, and then adds it to the command buffer.
appendBitmap	Generates a graphic display command, and then adds it to the command buffer.
appendInternational	Generates an international character specification command, and then adds it to the command buffer.
appendCodePage	Generates a code page specification command, and then adds it to the command buffer.
appendDeleteToEndOfLine	Generates a command to clear the screen until the end of the line, and then adds it to the command buffer.
appendClearScreen	Generates a command to clear the screen, and then adds it to the command buffer.
appendHomePosition	Generates a command to move the cursor to the home position, and then adds it to the command buffer.
appendTurnOn	Generates a command to turn on/off the backlight, and then adds it to the command buffer.
appendSpecifiedPosition	Generates a command to move the cursor to the specified position, and then adds it to the command buffer.
appendCursorMode	Generates a command to change the cursor mode, and then adds it to the command buffer.
appendContrastMode	Generates a command to change the contrast mode, and then adds it to the command buffer.
appendUserDefinedCharacter	Generates a command to register user-defined characters (SBCS), and then adds it to the command buffer.
appendUserDefinedDbcsCharacter	Generates a command to register user-defined characters (DBCS), and then adds it to the command buffer.
getCommands	Gets the command buffer (generated command).
getPassThroughCommands	Gets a command sequence with the pass-through command to the printer added at the beginning of the command buffer (generated command).

### Constants

Name	Description
InternationalType	International character constants.
CodePageType	Code Page constants.
CursorMode	Cursor Mode constants.
ContrastMode	ContrastMode constants.

## 9.1 Model : IDisplayCommandBuilder Interface

The IDisplayCommandBuilder interface is only for models which support a customer display. For the supporting models, refer to [Supported peripherals](#).

## 9.2 append Method

Adds data (text or command) to the command buffer.

### Declaration

void append(byte data);

void append(byte[] data);

### Parameter

Name	Description	Object type
data	Data (Text,Command)	byte
		byte[]

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createTextPattern(int number) {
    IDisplayCommandBuilder builder = StarIoExt.createDisplayCommandBuilder(DisplayModel.SCD222);

    builder.appendClearScreen();
    builder.appendCursorMode(CursorMode.Off);
    builder.appendHomePosition();

    byte[] pattern;

    ...

    builder.append(pattern);

    return builder.getPassThroughCommands();
}
```

Refer to *DisplayFunctions.java*.

### 9.3 appendBackSpace Method

Generates a backspace command, and then adds it to the command buffer.

#### *Declaration*

```
void appendBackSpace();
```

#### *Parameter*

Name	Description	Object type
-	-	-

#### *Return value*

Description	Object type
-	-

### 9.4 appendHorizontalTab Method

Generates a horizontal tab command, and then adds it to the command buffer.

#### *Declaration*

```
void appendHorizontalTab();
```

#### *Parameter*

Name	Description	Object type
-	-	-

#### *Return value*

Description	Object type
-	-

### 9.5 appendLineFeed Method

Generates a line feed command, and then adds it to the command buffer.

#### *Declaration*

```
void appendLineFeed();
```

#### *Parameter*

Name	Description	Object type
-	-	-

#### *Return value*

Description	Object type
-	-



## 9.6 appendCarriageReturn Method

Generates a carriage-return command, and then adds it to the command buffer.

### *Declaration*

```
void appendCarriageReturn();
```

### *Parameter*

Name	Description	Object type
-	-	-

### *Return value*

Description	Object type
-	-

## 9.7 appendBitmap Method

Generates a graphic display command, and then adds it to the command buffer.

### Declaration

```
void appendBitmap(Bitmap bitmap, boolean diffusion);
```

### Parameter

Name	Description	Object type
bitmap	Image you want to display Specify the instance of the 160 × 40 dots monochrome Bitmap class. If a different sized Bitmap is specified, it is resized to 160 × 40 dots. The Bitmap pixels are automatically converted to monochrome value.	Bitmap
diffusion	Random dither. <ul style="list-style-type: none"> <li>true ... Valid</li> <li>false ... Invalid</li> </ul>	boolean

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createGraphicPattern(int number, Resources resources) {
    IDisplayCommandBuilder builder = StarIoExt.createDisplayCommandBuilder(DisplayModel.SCD222);

    builder.appendClearScreen();
    builder.appendCursorMode(CursorMode.Off);
    // builder.appendHomePosition();

    Bitmap bitmap;

    switch (number) {
        default:
        case 0:
            bitmap = BitmapFactory.decodeResource(resources, R.drawable.display_image_1);
            break;
        case 1:
            bitmap = BitmapFactory.decodeResource(resources, R.drawable.display_image_2);
            break;
        case 2:
            bitmap = BitmapFactory.decodeResource(resources, R.drawable.display_image_3);
            break;
        case 3:
            bitmap = BitmapFactory.decodeResource(resources, R.drawable.display_image_4);
            break;
    }

    builder.appendBitmap(bitmap, false);

    return builder.getPassThroughCommands();
}
```

Refer to *DisplayFunctions.java*.

## 9.8 appendInternational Method

Generates an international character specification command, and then adds it to the command buffer.

### Declaration

```
void appendInternational(InternationalType internationalType);
```

### Parameter

Name	Description	Object type
internationalType	International character constants.	com.starmicronics.starioextension.IDisplayCommandBuilder.InternationalType

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createCharacterSet(InternationalType internationalType, CodePageType codePageType) {
    IDisplayCommandBuilder builder = StarIoExt.createDisplayCommandBuilder(DisplayModel.SCD222);

    builder.appendClearScreen();
    builder.appendCursorMode(CursorMode.Off);
    builder.appendHomePosition();

    builder.appendInternational(internationalType);
    builder.appendCodePage(codePageType);

    ...

    switch (codePageType) {
        default:          builder.append(pattern1); break; //
CP437,Katakana,CP850,CP860,CP863,CP865,CP1252,CP866,CP852,CP858
        case Japanese:    builder.append(pattern2); break;
        case SimplifiedChinese: builder.append(pattern3); break;
        case TraditionalChinese: builder.append(pattern4); break;
        case Hangul:      builder.append(pattern5); break;
    }

    return builder.getPassThroughCommands();
}
```

Refer to *DisplayFunctions.java*.

## 9.9 appendCodePage Method

Generates a code page specification command, and then adds it to the command buffer.

### Declaration

```
void appendCodePage(CodePageType codePageType);
```

### Parameter

Name	Description	Object type
codePageType	Code page constants.	com.starmicronics.starioextension.IDisplayCommandBuilder.CodePageType

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createCharacterSet(InternationalType internationalType, CodePageType codePageType) {
    IDisplayCommandBuilder builder = StarIoExt.createDisplayCommandBuilder(DisplayModel.SCD222);

    builder.appendClearScreen();
    builder.appendCursorMode(CursorMode.Off);
    builder.appendHomePosition();

    builder.appendInternational(internationalType);
    builder.appendCodePage(codePageType);

    ...

    switch (codePageType) {
        default:          builder.append(pattern1); break;    //
CP437,Katakana,CP850,CP860,CP863,CP865,CP1252,CP866,CP852,CP858
        case Japanese:    builder.append(pattern2); break;
        case SimplifiedChinese: builder.append(pattern3); break;
        case TraditionalChinese: builder.append(pattern4); break;
        case Hangul:      builder.append(pattern5); break;
    }

    return builder.getPassThroughCommands();
}
```

Refer to *DisplayFunctions.java*.

## 9.10 appendDeleteToEndOfLine Method

Generates a command to clear the screen until the end of the line, and then adds it to the command buffer.

### Declaration

```
void appendDeleteToEndOfLine();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

## 9.11 appendClearScreen Method

Generates a command to clear the screen, and then adds it to the command buffer.

### Declaration

```
void appendClearScreen();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createTextPattern(int number) {
    IDisplayCommandBuilder builder = StarIoExt.createDisplayCommandBuilder(DisplayModel.SCD222);

    builder.appendClearScreen();
    builder.appendCursorMode(CursorMode.Off);
    builder.appendHomePosition();

    byte[] pattern;

    ...

    builder.append(pattern);

    return builder.getPassThroughCommands();
}
```

Refer to *DisplayFunctions.java*.

## 9.12 appendHomePosition Method

Generates a command to move the cursor to the home position, and then adds it to the command buffer.

### Declaration

```
void appendHomePosition();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createTextPattern(int number) {
    IDisplayCommandBuilder builder = StarIoExt.createDisplayCommandBuilder(DisplayModel.SCD222);

    builder.appendClearScreen();
    builder.appendCursorMode(CursorMode.Off);
    builder.appendHomePosition();

    byte[] pattern;

    ...

    builder.append(pattern);

    return builder.getPassThroughCommands();
}
```

Refer to *DisplayFunctions.java*.

## 9.13 appendTurnOn Method

Generates a command to turn on/off the backlight, and then adds it to the command buffer.

### Declaration

```
void appendTurnOn(boolean turnOn);
```

### Parameter

Name	Description	Object type
turnOn	Backlight ON/OFF	boolean

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createTurnOn(boolean isTurnOn) {
    IDisplayCommandBuilder builder = StarIoExt.createDisplayCommandBuilder(DisplayModel.SCD222);

    ...

    builder.appendTurnOn(isTurnOn);

    return builder.getPassThroughCommands();
}
```

Refer to *DisplayFunctions.java*.









## 9.17 appendUserDefinedCharacter Method

Generates a command to register user-defined characters (SBCS), and then adds it to the command buffer.

### Declaration

```
void appendUserDefinedCharacter(int index, int code, byte[] font);
```

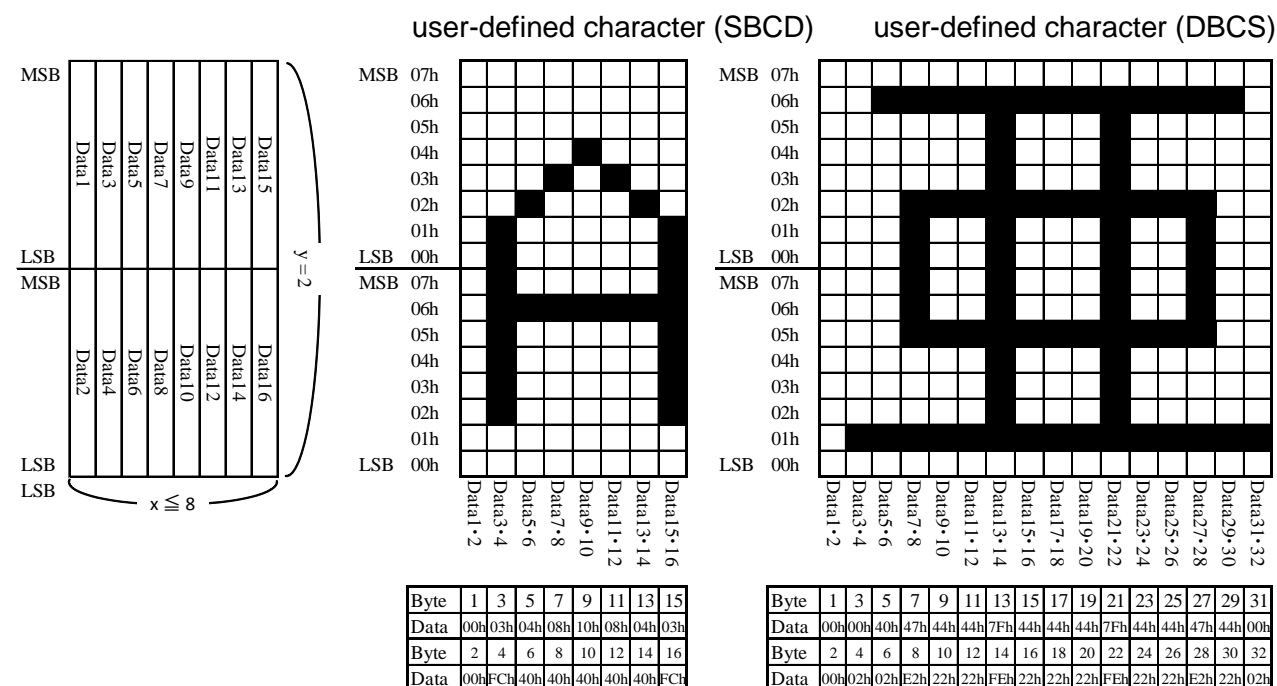
### Parameter

Name	Description	Object type
index	Font number $00h \leq \text{index} \leq 1Fh$	int
code	Character code of user-defined character. $20h \leq \text{code} \leq 7Fh$ If CodePageType.Japanese is specified with the appendCharacterSet method and the appendCharacterSetCodePage method, the following range is also supported. $A0h \leq \text{code} \leq DFh$	int
font	16-byte font data Refer to the font data format of the user-defined characters. Specifying null deletes the user-defined characters of the specified font No.	byte[]

### Return value

Description	Object type
-	-

## Format of user-defined character font data



### Example

```
public static byte[] createUserDefinedCharacter(boolean set) {
    IDisplayCommandBuilder builder = StarIoExt.createDisplayCommandBuilder(DisplayModel.SCD222);

    builder.appendClearScreen();
    builder.appendCursorMode(CursorMode.Off);
    builder.appendHomePosition();

    builder.appendInternational(InternationalType.USA);
    builder.appendCodePage(CodePageType.Japanese);

    if (set) {
        byte[] font = {
            (byte) 0x00, (byte) 0x00, (byte) 0x32, (byte) 0x00, (byte) 0x49, (byte) 0x00, (byte) 0x49, (byte) 0x7f, (byte) 0x26,
            (byte) 0x48, (byte) 0x00, (byte) 0x48, (byte) 0x00, (byte) 0x30, (byte) 0x00, (byte) 0x00
        };
        byte[] dbcsFont = {
            (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x03,
            (byte) 0x20, (byte) 0x04, (byte) 0x90, (byte) 0x04, (byte) 0x90, (byte) 0x02, (byte) 0x60,
            (byte) 0x00, (byte) 0x00, (byte) 0x07, (byte) 0xf0, (byte) 0x04, (byte) 0x80, (byte) 0x04, (byte) 0x80, (byte) 0x03,
            (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00
        };
        builder.appendUserDefinedCharacter(0, 0x20, font);
        builder.appendUserDefinedDbcsCharacter(0, 0x8140, dbcsFont);
    }
    else {
        builder.appendUserDefinedCharacter(0, 0x20, null);
        builder.appendUserDefinedDbcsCharacter(0, 0x8140, null);
    }

    byte[] pattern = {
        (byte) 0x5b, (byte) 0x20, (byte) 0x20, (byte) 0x53, (byte) 0x74, (byte) 0x61, (byte) 0x72, (byte) 0x20, (byte) 0x4d, (byte)
        0x69, (byte) 0x63, (byte) 0x72, (byte) 0x6f, (byte) 0x6e, (byte) 0x69, (byte) 0x63, (byte) 0x73, (byte) 0x20, (byte) 0x20, (byte)
        0x5d,
        (byte) 0x5b, (byte) 0x81, (byte) 0x40, (byte) 0x81, (byte) 0x40, (byte) 0x83, (byte) 0x58, (byte) 0x83, (byte) 0x5e, (byte)
        0x81, (byte) 0x5b, (byte) 0x90, (byte) 0xb8, (byte) 0x96, (byte) 0xa7, (byte) 0x81, (byte) 0x40, (byte) 0x81, (byte) 0x40, (byte)
        0x5d,
    };
    builder.append(pattern);

    return builder.getPassThroughCommands();
}
```

Refer to *DisplayFunctions.java*.

## 9.18 appendUserDefinedDbcsCharacter Method

Generates a command to register user-defined characters (DBCS), and then adds it to the command buffer.

### Declaration

```
void appendUserDefinedDbcsCharacter(int index, int code, byte[] font);
```

### Parameter

Name	Description	Object type
index	Font number $00h \leq \text{index} \leq 0Fh$	int
code	Character code of user-defined character. $20h \leq \text{code} \leq 7Fh$ If CodePageType.Japanese is specified with the appendCharacterSet method and the appendCharacterSetCodePage method, the following range is also supported. $80\ 00h \leq \text{code} \leq FF\ FFh$	int
font	32-byte font data Refer to the font data format of the user-defined characters. Specifying null deletes the user-defined characters of the specified font No.	byte[]

### Return value

Description	Object type
-	-

### Example

```
public static byte[] createUserDefinedCharacter(boolean set) {
    IDisplayCommandBuilder builder = StarIoExt.createDisplayCommandBuilder(DisplayModel.SCD222);

    builder.appendClearScreen();
    builder.appendCursorMode(CursorMode.Off);
    builder.appendHomePosition();

    builder.appendInternational(InternationalType.USA);
    builder.appendCodePage(CodePageType.Japanese);

    if (set) {
        byte[] font = {
            (byte) 0x00, (byte) 0x00, (byte) 0x32, (byte) 0x00, (byte) 0x49, (byte) 0x00, (byte) 0x49, (byte) 0x7f, (byte) 0x26,
            (byte) 0x48, (byte) 0x00, (byte) 0x48, (byte) 0x00, (byte) 0x30, (byte) 0x00, (byte) 0x00
        };
        byte[] dbcsFont = {
            (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x03,
            (byte) 0x20, (byte) 0x04, (byte) 0x90, (byte) 0x04, (byte) 0x90, (byte) 0x02, (byte) 0x60,
            (byte) 0x00, (byte) 0x00, (byte) 0x07, (byte) 0xf0, (byte) 0x04, (byte) 0x80, (byte) 0x04, (byte) 0x80, (byte) 0x03,
            (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00, (byte) 0x00
        };
        builder.appendUserDefinedCharacter(0, 0x20, font);
        builder.appendUserDefinedDbcsCharacter(0, 0x8140, dbcsFont);
    }
    else {
        builder.appendUserDefinedCharacter(0, 0x20, null);
        builder.appendUserDefinedDbcsCharacter(0, 0x8140, null);
    }

    byte[] pattern = {
        (byte) 0x5b, (byte) 0x20, (byte) 0x20, (byte) 0x53, (byte) 0x74, (byte) 0x61, (byte) 0x72, (byte) 0x20, (byte) 0x4d, (byte)
        0x69, (byte) 0x63, (byte) 0x72, (byte) 0x6f, (byte) 0x6e, (byte) 0x69, (byte) 0x63, (byte) 0x73, (byte) 0x20, (byte) 0x20, (byte)
        0x5d,
        (byte) 0x5b, (byte) 0x81, (byte) 0x40, (byte) 0x81, (byte) 0x40, (byte) 0x83, (byte) 0x58, (byte) 0x83, (byte) 0x5e, (byte)
        0x81, (byte) 0x5b, (byte) 0x90, (byte) 0xb8, (byte) 0x96, (byte) 0xa7, (byte) 0x81, (byte) 0x40, (byte) 0x81, (byte) 0x40, (byte)
        0x5d,
    };
    builder.append(pattern);

    return builder.getPassThroughCommands();
}
```

Refer to *DisplayFunctions.java*.

## 9.19 getCommands Method

Gets the command buffer (generated command).

### Declaration

```
byte[] getCommands();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
Command buffer (generated command)	byte[]

## 9.20 getPassThroughCommands Method

Gets a command sequence with the pass-through command to the printer added at the beginning of the command buffer (generated command).

### Declaration

```
byte[] getPassThroughCommands();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
Command buffer (generated command)	byte[]

### Example

```
public static byte[] createTextPattern(int number) {
    IDisplayCommandBuilder builder = StarIoExt.createDisplayCommandBuilder(DisplayModel.SCD222);

    builder.appendClearScreen();
    builder.appendCursorMode(CursorMode.Off);
    builder.appendHomePosition();

    byte[] pattern;

    ...

    builder.append(pattern);

    return builder.getPassThroughCommands();
}
```

Refer to *DisplayFunctions.java*.

## 9.21 InternationalType Constants

International character constants.

### *Declaration*

```
enum InternationalType {
    USA,
    France,
    Germany,
    Germany,
    Denmark,
    Sweden,
    Italy,
    Spain,
    Japan,
    Norway,
    Denmark2,
    Spain2,
    LatinAmerica,
    Korea
}
```

### *Constants*

Name	Description
USA	USA
France	France
Germany	Germany
UK	UK.
Denmark	Denmark
Sweden	Sweden
Italy	Italy.
Spain	Spain.
Japan	Japan.
Norway	Norway.
Denmark2	Denmark   .
Spain2	Spain   .
LatinAmerica	Latin America.
Korea	Korea.



## 9.22 CodePageType Constants

Code page constants.

### *Declaration*

```
enum CodePageType {
    CP437,
    Katakana,
    CP850,
    CP860,
    CP863,
    CP865,
    CP1252,
    CP866,
    CP852,
    CP858,
    Japanese,
    SimplifiedChinese,
    TraditionalChinese,
    Hangul
}
```

### *Constants*

Name	Description
CP437	CodePage437 (USA, Std. Europe).
Katakana	Katakana.
CP850	PC850 (Multilingual)
CP860	PC860 (Portuguese)
CP863	PC863 (Canadian-French)
CP865	PC865 (Norwegian)
CP1252	WPC1252
CP866	PC866 [Cyrillic #2]
CP852	PC852 [Latin 2]
CP858	Page 19 [PC858]
Japanese	Japanese font (shift JIS)
SimplifiedChinese	Simplified Chinese (GB2312)
TraditionalChinese	Traditional Chinese (Big5)
Hangul	Hangul (KSC5601)

## 9.23 CursorMode Constants

Cursor mode constants.

### *Declaration*

```
enum CursorMode {
    Off,
    Blink,
    On,
}
```

### *Constants*

Name	Description
Off	Cursor off
Blink	Cursor blinking
On	Cursor lighting

## 9.24 ContrastMode Constants

Contrast mode constants.

### *Declaration*

```
enum ContrastMode {
    Minus3,
    Minus2,
    Minus1,
    Default,
    Plus1,
    Plus2,
    Plus3,
}
```

### *Constants*

Name	Description
Minus3	Contrast: -3
Minus2	Contrast: -2
Minus1	Contrast: -1
Default	Default
Plus1	Contrast: +1
Plus2	Contrast: +2
Plus3	Contrast: +3

## 10 IPeripheralCommandParser Interface (starioextension.jar)

An interface to provide functions to generate commands for the peripheral (barcode reader / customer display) control.

### Method

Name	Description
createSendCommands	Generates a command to receive the response from the peripheral (barcode reader / customer display).
parse	Analyzes the response of the command (command generated with the createSendCommands) for the peripheral (barcode reader / customer display) control.

### Constant

Name	Description
ParseResult	Parse result constants.

### 10.1 Model : IPeripheralCommandParser interface

The IPeripheralCommandParser interface is only for models which support the peripheral (barcode reader / customer display). For the supporting models, refer to [Supported peripherals](#).

### 10.2 createSendCommands Method

Generates a command to receive the response from the peripheral (barcode reader / customer display).

#### Declaration

```
byte[] createSendCommands();
```

#### Parameter

Name	Description	Object type
-	-	-

#### Return value

Description	Object type
Generated command.	byte[]

### Example

```

public void run() {
    Communication.Result communicateResult = Communication.Result.ErrorOpenPort;
    boolean result = false;

    synchronized (mLock) {
        try {
            if (mPort == null) {
                mPort = StarIOPort.getPort(mPortName, mPortSettings, mTimeout, mContext);
            }

            communicateResult = Communication.Result.ErrorWritePort;
            StarPrinterStatus status = mPort.retrieveStatus();
            if (status.rawLength == 0) {
                throw new StarIOPortException("Unable to communicate with printer.");
            }

            communicateResult = Communication.Result.ErrorWritePort;
            byte[] sendData = mParser.createSendCommands();
            mPort.writePort(sendData, 0, sendData.length);

            List<Byte> receiveDataList = new ArrayList<>();
            byte[] readBuffer = new byte[1024];

            long start = System.currentTimeMillis();
            while (true) {
                if (1000 < (System.currentTimeMillis() - start)) {
                    communicateResult = Communication.Result.ErrorReadPort;
                    break;
                }

                try {
                    Thread.sleep(10);
                } catch (InterruptedException ignore) {}

                int receiveSize = mPort.readPort(readBuffer, 0, readBuffer.length);

                if (0 < receiveSize) {
                    for (int i = 0; i < receiveSize; i++) {
                        receiveDataList.add(readBuffer[i]);
                    }
                } else {
                    continue;
                }

                byte[] receiveData = new byte[receiveDataList.size()];
                int receiveDataLength = receiveDataList.size();

                for (int i = 0; i < receiveDataLength; i++) {
                    receiveData[i] = receiveDataList.get(i);
                }

                if (mParser.parse(receiveData, receiveDataLength) == ParseResult.Success) {
                    result = true;
                    communicateResult = Communication.Result.Success;
                    break;
                }
            }
        } catch (...) {}
    }
}

```

Refer to *Communication.java*.

### 10.3 parse Method

Analyzes the response of the command (command generated with the createSendCommands) for the peripheral (barcode reader / customer display) control.

#### *Declaration*

```
ParseResult parse(byte[] response, int length);
```

#### *Parameter*

Name	Description	Object type
response	Command response.	byte[]
length	Length of the command response.	int

#### *Return value*

Description	Object type
Parse result.	com.starmicronics.starioextension.IPeripheralCommandParser.ParseResult

#### *Example*

Refer to the example of the createSendCommands method.

## 10.4 ParseResult Constant

Parse result constants.

### *Declaration*

```
enum ParseResult {
    Invalid,
    Success,
    Failure,
}
```

### *Constants*

Name	Description
Invalid	Parse invalid.
Success	Parse success.
Failure	Parse failure.

## 11 IPeripheralConnectParser Interface (starioextension.jar)

An interface to provide functions to get the connection/disconnection status of the peripheral (barcode reader / customer display).

### *Declaration*

public interface IPeripheralConnectParser extends IPeripheralCommandParser

### *Method*

Name	Description
isConnected	Gets the connection/disconnection status of the peripherals (barcode reader / customer display).

### 11.1 Model : IPeripheralConnectParser Interface

The IPeripheralConnectParser interface is only for models which support the peripheral (barcode reader / customer display). For the supporting models, refer to [Supported peripherals](#).

## 11.2 isConnected Method

Gets the connection/disconnection status of the peripherals (barcode reader / customer display).  
Executes after the parse method returns ParseResult.Success.

### Declaration

```
boolean isConnected();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
The connection/disconnection status of the peripheral.	boolean

### Example

```
Communication.parseDoNotCheckCondition(DisplayFragment.class, parser, setting.getPortName(),
setting.getPortSettings(), 10000, getActivity(), new Communication.SendCallback() {
    @Override
    public void onStatus(boolean result, Communication.Result communicateResult) {
        if (!mIsForeground) {
            return;
        }

        String msg;
        String title;

        if (result) {
            title = "Check Status";

            if (parser.isConnected()) {
                msg = "Display Connect";
            }
            else {
                msg = "Display Disconnect";
            }
        }
        else {
            title = "Communication Result";
            msg = "Printer Impossible";
        }

        ...
    }
});
```

Refer to *DisplayFragment.java*/ *DisplayExtFragment.java*.



## 12 StarPRNT Android SDK Sample

### 12.1 Communication

An example of print data transmission of StarIO Android SDK equivalence and an example of print data transmission with a StarIoExtManager object.

#### **-StarIoExtManager-**

**If using a StarIoExtManager, between devices will be the always-on connection.**

**Therefore, if you shared with other applications and other terminal and the device, also when the transition to the transition and the sleep state to the other applications are envisioned, it will require consideration on the implementation on the connection status of the device.**

### Example (Using StarIoExtManager object)

```
public static Result sendCommands(byte[] commands, StarIoPort port, Context context) {
    Result result = Result.ErrorUnknown;

    try {
        if (port == null) {
            result = Result.ErrorOpenPort;
            return result;
        }

        StarPrinterStatus status;

        result = Result.ErrorBeginCheckedBlock;

        status = port.beginCheckedBlock();

        if (status.offline) {
            throw new StarIoPortException("A printer is offline");
        }

        result = Result.ErrorWritePort;

        port.writePort(commands, 0, commands.length);

        result = Result.ErrorEndCheckedBlock;

        port.setEndCheckedBlockTimeoutMillis(30000); // 30000mS!!!

        status = port.endCheckedBlock();

        if (status.coverOpen) {
            throw new StarIoPortException("Printer cover is open");
        }
        else if (status.receiptPaperEmpty) {
            throw new StarIoPortException("Receipt paper is empty");
        }
        else if (status.offline) {
            throw new StarIoPortException("Printer is offline");
        }

        result = Result.Success;
    } catch (StarIoPortException e) {

        ...

    }

    return result;
}
```

## 13 StarIoExtManager class included in the starioextension.jar

### Constructor

Name	Description
StarIoExtManager	Initializes the StarIoManager object.

### Method

Name	Description
connect	Management start.
disconnect	Management stop.
getPort	Gets the StarIoPort object.
getPrinterStatus	Gets the printer status.
getPrinterPaperStatus	Gets the printer paper status.
getPrinterCoverStatus	Gets the printer cover status.
getCashDrawerStatus	Gets the cash drawer status.
getBarcodeReaderStatus	Gets the barcode reader status.
getCashDrawerOpenActiveHigh	Get the mode of cash drawer open sensor active.
setCashDrawerOpenActiveHigh	Sets the mode of cash drawer open sensor active.
setListener	Sets the listener object of the StarIoExtManager.

### Constants

Name	Description
Type	Manager type constants.
PrinterStatus	Printer status constants.
PrinterPaperStatus	Printer paper status constants.
PrinterCoverStatus	Printer cover status constants.
CashDrawerStatus	Cash drawer status constants.
BarcodeReaderStatus	Barcode reader status constants.

#### **-BSC10 setting with USB I/F-**

Please set busy condition to "Reception Buffer Full". (MSW #7, bit4 set to ON)

#### **-Auto Power Down function with USB connection-**

Please use SM-S and SM-T series in Auto Power Down function "NO USE" setting (default setting).

## 13.1 StarIoExtManager Constructor

Initializes the StarIoManager object.

### Declaration

StarIoExtManager(Type type, String portName, String portSetting, int ioTimeoutMillis, Context context);

### Parameter

Name	Description	Object type
type	Manager type. <ul style="list-style-type: none"> <li>Standard ... Management of the printer and the cash drawer.</li> <li>WithBarcodeReader ... Management of the printer, cash drawer and the barcode reader.</li> <li>OnlyBarcodeReader ... Management of the barcode reader.</li> </ul>	com.starmicronics.starioextension.StarIoExtManager.Type
portName	Printer port name. It is the same as the portName of the <a href="#">getPort method</a> of the StarIoPort class.	String
portSettings	Port settings. It is the same as the portSettings of the <a href="#">getPort method</a> of the StarIoPort class.	String
ioTimeoutMillis	Timeout value for internal control and API.	int
context	Context.	android.content.Context

### Return value

Description	Object type
StarIoExtManager object.	com.starmicronics.starioextension.StarIoExtManager

### Example

```
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);

    PrinterSetting setting = new PrinterSetting(getContext());

    mStarIoExtManager = new StarIoExtManager(StarIoExtManager.Type.Standard, setting.getPortName(),
    setting.getPrinterType(), 10000, getContext()); // 10000mS!!!

    mStarIoExtManager.setListener(mStarIoExtManagerListener);
}
```

Refer to *PrinterExtFragment.java*, *CashDrawerExtFragment.java*, *BarcodeReaderExtFragment.java* and *CombinationExtFragment.java*.

## 13.2 connect Method

Management start.

### Declaration

```
public void connect(final IConnectionCallback callback);
```

### Parameter

Name	Description	Object type
callback	<p>When the connect is completed, check connection result as onConnected method parameter.</p> <p>-result-</p> <ul style="list-style-type: none"> <li>Connection result.</li> </ul>	com.starmicronics.starioextension.IConnectionCallback

### Return value

Description	Object type
-	-

### Example

```
public class PrinterExtFragment extends Fragment implements IConnectionCallback {

    ...

    @Override
    public void onStart() {
        super.onStart();

        ...

        mStarIoExtManager.connect(this);
    }

    ...

    @Override
    public void onConnected() {
        Log.d("PrinterExtFragment", "onConnected " + result);

        ...

    }

    ...

}
```

Refer to *PrinterExtFragment.java*, *CashDrawerExtFragment.java*, *BarcodeReaderExtFragment.java* and *CombinationExtFragment.java*.

## 13.3 disconnect Method

Management stop.

### Declaration

```
public void disconnect(IConnectionCallback callback);
```

### Parameter

Name	Description	Object type
callback	When the disconnect is completed, check disconnected result as onDisconnected method.	com.starmicronics.starioextension.IConnectionCallback

### Return value

Description	Object type

### Example

```
public class PrinterExtFragment extends Fragment implements IConnectionCallback {

    ...

    @Override
    public void onStop() {
        super.onStop();

        ...

        mStarloExtManager.disconnect(this);
    }

    ...

    @Override
    public void onDisconnected() {
        Log.d("PrinterExtFragment", "onDisconnected");

        ...

    }

    ...

}
```

Refer to *PrinterExtFragment.java*, *CashDrawerExtFragment.java*, *BarcodeReaderExtFragment.java* and *CombinationExtFragment.java*.

## 13.4 getPort Method

Gets the StarIOPort object.

### Declaration

```
StarIOPort getPort();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
StarIOPort object.	com.starmicronics.stario.StarIOPort

## 13.5 getPrinterStatus Method

Gets the printer Online status.

### Declaration

```
PrinterStatus getPrinterStatus();
```

### Parameter

Name	Description	Object type
-	-	-

### Value

Description	Object type
Printer status.	com.starmicronics.starioextension.StarIoExtManager.PrinterStatus
• Invalid ... Invalid.	
• Impossible ... Impossible to use printer.	
• Online ... Detect online.	
• Offline ... Detect offline.	

## 13.6 getPrinterPaperStatus Method

Gets the printer paper status.

### Declaration

```
PrinterPaperStatus getPrinterPaperStatus();
```

### Parameter

Name	Description	Object type
-	-	-

### Value

Description	Object type
Printer paper status. <ul style="list-style-type: none"> <li>Invalid ... Invalid.</li> <li>Impossible ... Impossible to use Equipment.</li> <li>Ready ... Detect paper ready.</li> <li>NearEmpty ... Detect paper near end.</li> <li>Empty ... Detect paper empty.</li> </ul>	com.starmicronics.starioextension.StarIoExtManager.PrinterPaperStatus

## 13.7 getPrinterCoverStatus Method

Gets the printer cover status.

### Declaration

```
PrinterCoverStatus getPrinterCoverStatus();
```

### Parameter

Name	Description	Object type
-	-	-

### Value

Description	Object type
Printer cover status. <ul style="list-style-type: none"> <li>Invalid ... Invalid.</li> <li>Impossible ... Impossible to use Equipment.</li> <li>Open ... Detect cover open.</li> <li>Close ... Detect cover close.</li> </ul>	com.starmicronics.starioextension.StarIoExtManager.PrinterCoverStatus



## 13.8 getCashDrawerStatus Method

Gets the cash drawer status.

### Declaration

```
CashDrawerStatus getCashDrawerStatus();
```

### Parameter

Name	Description	Object type
-	-	-

### Value

Description	Object type
Cash drawer status. <ul style="list-style-type: none"> <li>Invalid ... Invalid.</li> <li>Impossible ... Impossible to use Equipment.</li> <li>Open ... Detect Cash drawer open.</li> <li>Close ... Detect Cash drawer close.</li> </ul>	com.starmicronics.starioextension.StarloExtManager.CashDrawerStatus

## 13.9 getBarcodeReaderStatus Method

Gets the barcode reader status.

### Declaration

```
BarcodeReaderStatus getBarcodeReaderStatus();
```

### Parameter

Name	Description	Object type
-	-	-

### Value

Description	Object type
Barcode reader status. <ul style="list-style-type: none"> <li>Invalid ... Invalid.</li> <li>Impossible ... Impossible to use Equipment.</li> <li>Connect ... Detect Barcode reader connection.</li> <li>Disconnect ... Detect Barcode reader disconnection.</li> </ul>	com.starmicronics.starioextension.StarloExtManager.BarcodeReaderStatus

### 13.10 getCashDrawerOpenActiveHigh Method

Gets the mode of cash drawer open sensor active.

#### Declaration

```
boolean getCashDrawerOpenActiveHigh();
```

#### Parameter

Name	Description	Object type
-	-	-

#### Value

Description	Object type
Mode of a cash drawer open sensor active. <ul style="list-style-type: none"> <li>true ... Active high.</li> <li>false ... Active low.</li> </ul>	boolean

### 13.11 setCashDrawerOpenActiveHigh Method

Sets the mode of cash drawer open sensor active.

#### Declaration

```
void setCashDrawerOpenActiveHigh(boolean isActiveHigh);
```

#### Parameter

Name	Description	Object type
isActiveHigh	Mode of a cash drawer open sensor active. <ul style="list-style-type: none"> <li>true ... Active high.</li> <li>false ... Active low.</li> </ul> <p><b>* Be the default value (true) for mPOP.-</b></p>	boolean

#### Return Value

Description	Object type
-	-

## 13.12 setListener Method

Sets the listener object of the StarloExtManager.

### Declaration

```
void setListener(StarloExtManagerListener listener);
```

### Parameter

Name	Description	Object type
listener	Listener object of the StarloExtManager.	com.starmicronics.starioextension.StarloExtManagerListener

### Return value

Description	Object type
-	-

### Example

```
public class PrinterExtFragment extends Fragment implements IConnectionCallback {
    ...

    public void onStart() {
        super.onStart();

        ...

        mStarloExtManager.setListener(mStarloExtManagerListener);

        ...
    }

    private final StarloExtManagerListener mStarloExtManagerListener = new StarloExtManagerListener() {
        ...
    };
}
```

Refer to *PrinterExtFragment.java*, *CashDrawerExtFragment.java*, *BarcodeReaderExtFragment.java* and *CombinationExtFragment.java*.

## 13.13 Type Constants

Manager type constants.

### *Declaration*

```
public enum Type {
    Standard,
    WithBarcodeReader,
    OnlyBarcodeReader,
}
```

### *Constants*

Name	Description
Standard	Management of the printer and the cash drawer.
WithBarcodeReader	Management of the printer, cash drawer and the barcode reader.
OnlyBarcodeReader	Management of the barcode reader.

## 13.14 PrinterStatus Constants

Printer status constants.

### *Declaration*

```
public enum PrinterStatus {
    Invalid,
    Impossible,
    Online,
    Offline
}
```

### *Constants*

Name	Description
Invalid	Invalid.
Impossible	Impossible to use printer.
Online	Detect Printer online.
Offline	Detect Printer offline.

## 13.15 PrinterPaperStatus Constants

Printer paper status constants.

### *Declaration*

```
public enum PrinterPaperStatus {
    Invalid,
    Impossible,
    Ready,
    NearEmpty,
    Empty
}
```

### *Constants*

Name	Description
Invalid	Invalid.
Impossible	Impossible to use Printer.
Ready	Detect Printer paper ready.
NearEmpty	Detect Printer paper near end.
Empty	Detect Printer paper empty.

## 13.16 PrinterCoverStatus Constants

Printer cover status constants.

### *Declaration*

```
public enum PrinterCoverStatus {
    Invalid,
    Impossible,
    Open,
    Close
}
```

### *Constants*

Name	Description
Invalid	Invalid.
Impossible	Impossible to use Printer.
Open	Detect Printer cover open.
Close	Detect Printer cover close.

## 13.17 CashDrawerStatus Constants

Cash drawer status constants.

### *Declaration*

```
public enum CashDrawerStatus {
    Invalid,
    Impossible,
    Open,
    Close
}
```

### *Constants*

Name	Description
Invalid	Invalid.
Impossible	Impossible to use Cash drawer.
Open	Detect Cash drawer open.
Close	Detect Cash drawer close.

## 13.18 BarcodeReaderStatus Constants

Barcode reader status constants.

### *Declaration*

```
public enum BarcodeReaderStatus {
    Invalid,
    Impossible,
    Connect,
    Disconnect
}
```

### *Constants*

Name	Description
Invalid	Invalid.
Impossible	Impossible to use Barcode reader.
Connect	Detect Barcode reader connection.
Disconnect	Detect Barcode reader disconnection.

## 14 IConnectionCallback interface included in the starioextension.jar

### Method

Name	Description
onConnected	Tells the connection result. * <i>Override</i>
onDisconnected	Tells the disconnect completed. * <i>Override</i>

### Constants

Name	Description
ConnectResult	Connection result constants.

### 14.1 onConnected Method

Tells the connection result. \* *Override*

#### Declaration

```
void onConnected(ConnectResult result);
```

#### Parameter

Name	Description	Object type
result	Connection result.	com.starmicronics.starioextension.IConnectionCallback.ConnectResult

#### Return value

Description	Object type
-	-

### Example

```
@Override
public void onConnected(ConnectResult result) {
    Log.d("PrinterExtFragment", "onConnected " + result);
    ...
}
```

Refer to *PrinterExtFragment.java*, *CashDrawerExtFragment.java*, *BarcodeReaderExtFragment.java* and *CombinationExtFragment.java*.

## 14.2 onDisconnected Method

Tells the disconnect completed. \* *Override*

### Declaration

```
void onDisconnected();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
public void onDisconnected() {
    Log.d("PrinterExtFragment", "onDisconnected");
    ...
}
```

Refer to *PrinterExtFragment.java*, *CashDrawerExtFragment.java*, *BarcodeReaderExtFragment.java* and *CombinationExtFragment.java*.

## 14.3 ConnectResult Constants

Connection result constants.

### Declaration

```
enum ConnectResult {
    Success,
    Failure,
    AlreadyConnected
}
```

### Constants

Name	Description
Success	Success.
Failure	Failure.
AlreadyConnected	Already connected.



## 15 StarloExtManagerListener class included in the starioextension.jar

### Method

Name	Description
onPrinterImpossible	Tells the listener the printer impossible. * <i>Override</i>
onPrinterOnline	Tells the listener the printer has come online. * <i>Override</i>
onPrinterOffline	Tells the listener the printer has come offline. * <i>Override</i>
onPrinterPaperReady	Tells the listener the printer has come paper ready. * <i>Override</i>
onPrinterPaperNearEmpty	Tells the listener the printer has come paper near end. * <i>Override</i>
onPrinterPaperEmpty	Tells the listener the printer has come paper empty. * <i>Override</i>
onPrinterCoverOpen	Tells the listener the printer has come cover open. * <i>Override</i>
onPrinterCoverClose	Tells the listener the printer has come cover close. * <i>Override</i>
onCashDrawerOpen	Tells the listener the cash drawer has come open. * <i>Override</i>
onCashDrawerClose	Tells the listener the cash drawer has come close. * <i>Override</i>
onBarcodeReaderImpossible	Tells the listener the barcode reader impossible. * <i>Override</i>
onBarcodeReaderConnect	Tells the listener the barcode reader connected. * <i>Override</i>
onBarcodeReaderDisconnect	Tells the listener the barcode reader disconnected. * <i>Override</i>
onBarcodeDataReceive	Tells the listener the barcode data received. * <i>Override</i>
onAccessoryConnectSuccess	Tells the listener the accessory (Bluetooth / USB) connection succeeded from disconnection. * <i>Override</i>
onAccessoryConnectFailure	Tells the listener the accessory (Bluetooth / USB) connection failed from disconnection. * <i>Override</i>
onAccessoryDisconnect	Tells the listener the Bluetooth/USB accessory disconnected. * <i>Override</i>
onStatusUpdate	Tells the listener the status updated. * <i>Override</i>

### 15.1 onPrinterImpossible Method

Tells the listener the printer impossible. \* *Override*

#### Declaration

```
void onPrinterImpossible();
```

#### Parameter

Name	Description	Object type
-	-	-

#### Return value

Description	Object type
-	-

#### Example

```
@Override
public void onPrinterImpossible() {
    mComment.setText("Printer Impossible.");

    mComment.setTextColor(Color.RED);
}
```

Refer to *PrinterExtFragment.java*, *CashDrawerExtFragment.java* and *CombinationExtFragment.java*.

## 15.2 onPrinterOnline Method

Tells the listener the printer has come online. \* *Override*

### Declaration

```
void onPrinterOnline();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onPrinterOnline() {
    mComment.setText("Printer Online.");
    mComment.setTextColor(Color.BLUE);
}
```

Refer to *PrinterExtFragment.java* and *CombinationExtFragment.java*.

## 15.3 onPrinterOffline Method

Tells the listener the printer has come offline. \* *Override*

### Declaration

```
void onPrinterOffline();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onPrinterOffline() {
    mComment.setText("Printer Offline.");
    mComment.setTextColor(Color.RED);
}
```

Refer to *PrinterExtFragment.java* and *CombinationExtFragment.java*.

## 15.4 onPrinterPaperReady Method

Tells the listener the printer has come paper ready. \* *Override*

### Declaration

```
void onPrinterPaperReady();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onPrinterPaperReady() {
    mComment.setText("Printer Paper Ready.");

    mComment.setTextColor(Color.BLUE);
}
```

Refer to *PrinterExtFragment.java* and *CombinationExtFragment.java*.

## 15.5 onPrinterPaperNearEmpty Method

Tells the listener the printer has come paper near end. \* *Override*

### Declaration

```
void onPrinterPaperNearEmpty();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onPrinterPaperNearEmpty() {
    mComment.setText("Printer Paper Near Empty.");

    mComment.setTextColor(0xfffffa500); // Orange
}
```

Refer to *PrinterExtFragment.java* and *CombinationExtFragment.java*.

## 15.6 onPrinterPaperEmpty Method

Tells the listener the printer has come paper empty. \* *Override*

### Declaration

```
void onPrinterPaperEmpty();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onPrinterPaperEmpty() {
    mComment.setText("Printer Paper Empty.");
    mComment.setTextColor(Color.RED);
}
```

Refer to *PrinterExtFragment.java* and *CombinationExtFragment.java*.

## 15.7 onPrinterCoverOpen Method

Tells the listener the printer has come cover open. \* *Override*

### Declaration

```
void onPrinterCoverOpen();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onPrinterCoverOpen() {
    mComment.setText("Printer Cover Open.");
    mComment.setTextColor(Color.RED);
}
```

Refer to *PrinterExtFragment.java* and *CombinationExtFragment.java*.

## 15.8 onPrinterCoverClose Method

Tells the listener the printer has come cover close. \* *Override*

### Declaration

```
void onPrinterCoverClose();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onPrinterCoverClose() {
    mComment.setText("Printer Cover Close.");

    mComment.setTextColor(Color.BLUE);
}
```

Refer to *PrinterExtFragment.java* and *CombinationExtFragment.java*.

## 15.9 onCashDrawerOpen Method

Tells the listener the cash drawer has come open. \* *Override*

### Declaration

```
void onCashDrawerOpen();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onCashDrawerOpen() {
    mComment.setText("Cash Drawer Open.");

    mComment.setTextColor(Color.MAGENTA);
}
```

Refer to *CashDrawerExtFragment.java* and *CombinationExtFragment.java*.

## 15.10 onCashDrawerClose Method

Tells the listener the cash drawer has come close. \* *Override*

### Declaration

```
void onCashDrawerClose();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onCashDrawerClose() {
    mComment.setText("Cash Drawer Close.");

    mComment.setTextColor(Color.BLUE);
}
```

Refer to *CashDrawerExtFragment.java* and *CombinationExtFragment.java*.

## 15.11 onBarcodeReaderImpossible Method

Tells the listener the barcode reader impossible. \* *Override*

### Declaration

```
void onBarcodeReaderImpossible();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onBarcodeReaderImpossible() {
    mComment.setText("Barcode Reader Impossible.");

    mComment.setTextColor(Color.RED);
}
```

Refer to *BarcodeReaderExtFragment.java* and *CombinationExtFragment.java*.

## 15.12 onBarcodeReaderConnect Method

Tells the listener the barcode reader connected. \* *Override*

### Declaration

```
void onBarcodeReaderConnect();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onBarcodeReaderConnect() {
    mComment.setText("Barcode Reader Connect.");

    mComment.setTextColor(Color.BLUE);
}
```

Refer to *BarcodeReaderExtFragment.java* and *CombinationExtFragment.java*.

## 15.13 onBarcodeReaderDisconnect Method

Tells the listener the barcode reader disconnected. \* *Override*

### Declaration

```
void onBarcodeReaderDisconnect();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onBarcodeReaderDisconnect() {
    mComment.setText("Barcode Reader Disconnect.");

    mComment.setTextColor(Color.RED);
}
```

Refer to *BarcodeReaderExtFragment.java* and *CombinationExtFragment.java*.

## 15.14 onBarcodeDataReceive Method

Tells the listener the barcode data received. \* *Override*

### Declaration

```
void onBarcodeDataReceive(byte[] data);
```

### Parameter

Name	Description	Object type
data	Received barcode data.	byte[]

### Return value

Description	Object type
-	-

### Example

```
@Override
public void onBarcodeDataReceive(byte[] data) {
    String[] barcodeDataArray = new String(data).split("\n");

    for(String barcodeData:barcodeDataArray) {

        ...
    }
}
```

Refer to *BarcodeReaderExtFragment.java* and *CombinationExtFragment.java*.

## 15.15 onAccessoryConnectSuccess Method

Tells the listener the accessory (Bluetooth / USB) connection succeeded from disconnection.

\* *Override*

### Declaration

```
void onAccessoryConnectSuccess();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onAccessoryConnectSuccess() {
    mComment.setText("Accessory Connect Success.");

    mComment.setTextColor(Color.BLUE);
}
```

Refer to *PrinterExtFragment.java*, *CashDrawerExtFragment.java*, *BarcodeReaderExtFragment.java* and *CombinationExtFragment.java*.



## 15.16 onAccessoryConnectFailure Method

Tells the listener the accessory (Bluetooth / USB) connection failed from disconnection.

\* *Override*

### Declaration

```
void onAccessoryConnectFailure();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onAccessoryConnectFailure() {
    mComment.setText("Accessory Connect Failure.");

    mComment.setTextColor(Color.RED);
}
```

Refer to *PrinterExtFragment.java*, *CashDrawerExtFragment.java*, *BarcodeReaderExtFragment.java* and *CombinationExtFragment.java*.

## 15.17 onAccessoryDisconnect Method

Tells the listener the accessory (Bluetooth / USB) disconnected. \* *Override*

### Declaration

```
void onAccessoryDisconnect();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
-	-

### Example

```
@Override
void onAccessoryDisconnect() {
    mComment.setText("Accessory Disconnect.");

    mComment.setTextColor(Color.RED);
}
```

Refer to *PrinterExtFragment.java*, *CashDrawerExtFragment.java*, *BarcodeReaderExtFragment.java* and *CombinationExtFragment.java*.

## 15.18 onStatusUpdate Method

Tells the listener the status updated. \* *Override*

### Declaration

```
void onStatusUpdate(String status);
```

### Parameter

Name	Description	Object type
status	<p>Updated status.</p> <p>Hexdecimal digit sequence of 3rd to 6th bytes in Automatic Status (*) (ex. "28000000")</p> <p>-Status update timing-</p> <ul style="list-style-type: none"> <li>• When the status changes.</li> <li>• Even no status change, every 5 min.</li> </ul> <p>* Please refer to STAR Line Mode and StarPRNT command manual for details of Automatic Status.</p>	String

### Return value

Description	Object type
-	-

### Example

```
@Override
void onStatusUpdate(String status) {
    mComment.setText(status);

    mComment.setTextColor(Color.GREEN);
}
```

Refer to *AllReceiptsExtFragment.java*.

## 16 StarBluetoothManagerFactory class (starioextension.jar)

Class to get the StarBluetoothManager object by specifying the emulation.

### Method

Name	Description
getManager	Gets the instance of the StarBluetoothManager class.

### 16.1 getManager Method

Gets the object of the StarBluetoothManager class for the emulation to be passed in the parameter.

### Declaration

public static StarBluetoothManager getManager(String portName, String portSettings, int ioTimeoutMillis, Emulation emulation) throws StarIOException;

### Parameter

Name	Description	Object type
portName	Printer port name It is the same as the portName of the <a href="#">getPort method</a> of the StarIOPort class.	String
portSettings	Port setting It is the same as the portSettings of the <a href="#">getPort method</a> of the StarIOPort class.	String
ioTimeoutMillis	Timeout value for internal control and API.	int
emulation	Emulation	com.starmicronics.starioextension. StarIoExt.Emulation

### Return value

Description	Object type
StarIoExtManager object	com.starmicronics.stario.StarBluetoothManager

Refer to [Bluetooth setting change flow using StarBluetoothManager](#) about the procedure for changing the Bluetooth setting.

Constant of "Emulation" for each model, refer to [Emulation Constants](#).

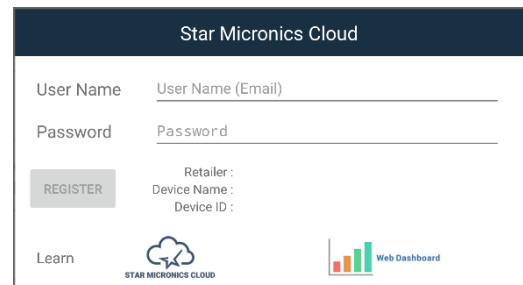
## 17 CloudServices class included in the smcloudservices.aar

### Method

Name	Description
showRegistrationView	It displays a view of the Star Micronics Cloud registration.
isRegistered	Checks whether the application is registered with the Star Micronics Cloud.

### 17.1 showRegistrationView Method

It displays a view of the Star Micronics Cloud registration.



The image shows a registration form titled "Star Micronics Cloud". It contains fields for "User Name" (with a hint "User Name (Email)") and "Password". Below these is a "REGISTER" button. To the right of the button are labels for "Retailer:", "Device Name:", and "Device ID:". At the bottom left is a "Learn" link, and at the bottom right is a "Web Dashboard" link with a bar chart icon. The Star Micronics Cloud logo is also present.

### Declaration

```
public synchronized static void showRegistrationView(FragmentManager fragmentManager,
DialogInterface.OnDismissListener listener);
```

### Parameter

Name	Description	Object type
fragmentManager	Fragment manager.	android.support.v4.app.FragmentManager
listener	Listener object.	android.content.DialogInterface.OnDismissListener

### Return value

Description	Object type
-	-

### Example

```
@Override
public void onItemClick(AdapterView<?> parent, View view, int position, long id) {
    super.onItemClick(parent, view, position, id);

    ...

    CloudServices.showRegistrationView(getChildFragmentManager(), new DialogInterface.OnDismissListener() {
        @Override
        public void onDismiss(DialogInterface dialog) {

            ...

        }
    });

    ...
}
```

Refer to *AllReceiptsFragment.java*.

## 17.2 isRegistered Method

Checks whether the application is registered with the Star Micronics Cloud.

### Declaration

```
public synchronized static boolean isRegistered(Context context);
```

### Parameter

Name	Description	Object type
context	Context.	android.content.Context

### Return value

Description	Object type
Result. <ul style="list-style-type: none"> <li>true ... Registered.</li> <li>false ... Unregistered.</li> </ul>	boolean

### Example

```
private void updateList() {
    ...

    boolean isRegistered = CloudServices.isRegistered(getContext());

    ...

    if (isRegistered) {
        ...
    }
    else {
        ...
    }

    ...
}
```

Refer to *AllReceiptsFragment.java*.

---

## 18 AllReceipts class included in the smcloudservices.aar

---

### *Method*

Name	Description
uploadBitmap	Uploads bitmap to the Star Micronics Service.
uploadData	Uploads data to the Star Micronics Service.
updateStatus	Updates the device status information on the Star Micronics Cloud.
generateAllReceipts	Generates the print data for the AllReceipts™ use.

## 18.1 Model : AllReceipts class Method

Supported Method for each models.

Function	Method	mC-Print2	mC-Print3	mPOP	FVP10	TSP100	TSP650II	TSP700II	TSP800II	SM-S210i	SM-S220i	SM-S230i	SM-T300i/T300	SM-T400i	BSC10	SM-S210i StarPRNT	SM-S220i StarPRNT	SM-S230i StarPRNT	SM-T300i/T300 StarPRNT	SM-T400i StarPRNT	SM-L200	SM-L300	SP700
Upload	uploadBitmap	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	-
	uploadData	✓	✓	✓	✓	-	✓	✓	✓	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	-
Update	updateStatus	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	-
Generate	generateAllReceipts	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	-

- : Not guarantee.

## 18.2 uploadBitmap Method

Uploads bitmap (Bitmap object) to the Star Micronics Service.

### Declaration

```
public synchronized static String uploadBitmap(Context context, Bitmap bitmap, RequestCallback callback);
```

### Parameter

Name	Description	Object type
context	Context.	android.content.Context
bitmap	Bitmap to upload.	android.graphics.Bitmap
callback	When the upload is completed, check upload result as following status.  -statusCode- • HTTP status code.  -error- • Error information when fails to upload data.	com.starmicronics.cloudservices. .RequestCallback

### Return value

Description	Object type
Uploaded URL.	String

### Example

```
public static byte[] createData(Context context, Emulation emulation, Bitmap bitmap, RequestCallback callback) {
    String urlString = AllReceipts.uploadBitmap(context, bitmap, callback);

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendBitmap(bitmap, false);

    byte[] data = AllReceipts.generateAllReceipts(context, urlString, emulation, true, true);

    builder.appendRaw(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to AllReceiptsFunctions.java.



## 18.3 uploadData Method

Uploads data (byte[] object) to the Star Micronics Service.

### Declaration

```
public synchronized static String uploadData(Context context, byte[] data, Emulation emulation,
CharacterCode characterCode, int width, RequestCallback callback);
```

### Parameter

Name	Description	Object type
context	Context.	android.content.Context
data	Data to upload.	byte[]
emulation	Emulation type. <ul style="list-style-type: none"> <li>StarloExtEmulationStarPRNT ... StarPRNT emulation.</li> <li>StarloExtEmulationStarLine ... STAR Line Mode emulation.</li> <li><del>StarloExtEmulationStarGraphic ... STAR Graphic Mode emulation.</del></li> <li>StarloExtEmulationEscPos ... ESC/POS emulation.</li> <li><del>StarloExtEmulationEscPosMobile ... ESC/POS Mobile emulation.</del></li> <li><del>StarloExtEmulationStarDotImpact ... STAR Dot Impact emulation.</del></li> </ul>	com.starmicronics.starioextension.StarloExt.Emulation
characterCode	Character code type constants. <ul style="list-style-type: none"> <li>StarloExtCharacterCodeStandard ... Standard character code.</li> <li>StarloExtCharacterCodeJapanese ... Japanese character code.</li> <li><del>StarloExtCharacterCodeSimplifiedChinese ... Simplified chinese character code.</del></li> <li><del>StarloExtCharacterCodeTraditionalChinese ... Traditional chinese character code.</del></li> </ul>	com.starmicronics.starioextension.StarloExt.CharacterCode
width	Printable width. (Units : Dots)	int
callback	When the upload is completed, check upload result as following status. -statusCode- <ul style="list-style-type: none"> <li>HTTP status code.</li> </ul> -error- Error information when fails to upload data.	com.starmicronics.cloudservices.RequestCallback

### Return value

Description	Object type
Uploaded URL.	String

Constant of "Emulation" for each model, refer to [Emulation Constants](#).

### Example

```
public static byte[] createData(Context context, Emulation emulation, CharacterCode characterCode, byte[] data,
RequestCallback callback) {
    ICommandBuilder uploadDataBuilder = StarloExt.createCommandBuilder(emulation);

    uploadDataBuilder.beginDocument();

    uploadDataBuilder.append(data);

    uploadDataBuilder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    uploadDataBuilder.endDocument();

    byte[] receiptData = uploadDataBuilder.getCommands();

    String urlString = AllReceipts.uploadData(context, receiptData, emulation, characterCode, width, callback);

    ICommandBuilder printDataBuilder = StarloExt.createCommandBuilder(emulation);

    printDataBuilder.beginDocument();

    printDataBuilder.append(data);

    byte[] allReceiptsData = AllReceipts.generateAllReceipts(context, urlString, emulation, true, true);

    printDataBuilder.appendRaw(allReceiptsData);

    printDataBuilder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    printDataBuilder.endDocument();

    return printDataBuilder.getCommands();
}
```

Refer to *AllReceiptsFunctions.java*.

## 18.4 updateStatus Method

Updates the device status information on the Star Micronics Cloud.

### Declaration

```
public synchronized static void updateStatus(Context context, String status, RequestCallback callback);
```

### Parameter

Name	Description	Object type
context	Context.	android.content.Context
status	Updated status.  Hexadecimal digit sequence of 3rd to 6th bytes in Automatic Status (*) (ex. "28000000")  * Please refer to STAR Line Mode and StarPRNT command manual for details of Automatic Status.	String
callback	When the update is completed, check update result as following parameter.  -statusCode- • HTTP status code.  -error- • If the request fails, the error parameter contains information about the failure.	com.starmicronics.cloudservices. .RequestCallback

### Return value

Description	Object type
-	-

### Example

```
@Override
public void onStatusUpdate(StarIoExtManager manager, String status) {
    AllReceipts.updateStatus(getContext(), status, new RequestCallback() {
        @Override
        public void onRequestResult(int statusCode, RequestError requestError) {
            String message;

            if (requestError != null) {
                message = requestError.getMessage();
            }
            else {
                message = "Status Code : " + statusCode;
            }

            Toast.makeText(getContext(), message, Toast.LENGTH_SHORT).show();
        }
    });
}
```

Refer to AllReceiptsExtFragment.java.

## 18.5 generateAllReceipts Method

Generates the print data for the AllReceipts™ use.

### Declaration

```
public synchronized static byte[] generateAllReceipts(Context context, String urlString, Emulation
emulation, boolean info, boolean qrCode);
public synchronized static byte[] generateAllReceipts(Context context, String urlString, Emulation
emulation, boolean info, boolean qrCode, int width);
```

### Parameter

Name	Description	Object type
context	Context.	android.content.Context
urlString	Uploaded URL.	String
emulation	Emulation type. <ul style="list-style-type: none"> <li>StarPRNT ... StarPRNT emulation.</li> <li>StarLine ... STAR Line Mode emulation.</li> <li>StarGraphic ... STAR Graphic Mode emulation.</li> <li>EscPos ... ESC/POS emulation.</li> <li><del>EscPosMobile ... ESC/POS Mobile emulation.</del></li> <li><del>StarDotImpact ... STAR Dot Impact emulation.</del></li> </ul>	com.starmicronics.starioextension.StarloExt.Emulation
info	Generates information logo. <ul style="list-style-type: none"> <li>true ... Valid.</li> <li>false ... Invalid.</li> </ul>	boolean
qrCode	Generates QR code. <ul style="list-style-type: none"> <li>true ... Valid.</li> <li>false ... Invalid.</li> </ul>	boolean
width	Printable width. (Units : Dots)	int

### Return value

Description	Object type
Generated print data.	byte[]

Constant of "Emulation" for each model, refer to [Emulation Constants](#).

### Example

```
public static byte[] createData(Context context, Emulation emulation, Bitmap bitmap, int width, RequestCallback callback) {
    String urlString = AllReceipts.uploadBitmap(context, bitmap, callback);

    ICommandBuilder builder = StarIoExt.createCommandBuilder(emulation);

    builder.beginDocument();

    builder.appendBitmap(bitmap, false);

    byte[] data;

    if (emulation == Emulation.StarGraphic) {
        data = AllReceipts.generateAllReceipts(context, urlString, emulation, true, true, width); // Support to
        centering in Star Graphic.
    }
    else {
        data = AllReceipts.generateAllReceipts(context, urlString, emulation, true, true); // Non support to
        centering in Star Graphic.
    }

    builder.appendRaw(data);

    builder.appendCutPaper(CutPaperAction.PartialCutWithFeed);

    builder.endDocument();

    return builder.getCommands();
}
```

Refer to *AllReceiptsFunctions.java*.

## 19 RequestCallback class included in the smcloudservices.aar

### Method

Name	Description
onRequestResult	To notify the completion of the asynchronous execution. * <i>Override</i>

### 19.1 onRequestResult Method

To notify the completion of the asynchronous execution. \* *Override*

### Declaration

```
public abstract void onRequestResult(int statusCode, RequestError error);
```

### Parameter

Name	Description	Object type
statusCode	HTTP status code.	int
error	Error information when fails to upload data and update status.	com.starmicronics.cloudservices. .RequestError

### Return value

Description	Object type
-	-

### Example

```
private final RequestCallback mAllReceiptsCallback = new RequestCallback() {
    @Override
    public void onRequestResult(int statusCode, RequestError error) {
        String message;

        if (error != null) {
            message = error.getMessage();
        }
        else {
            message = "Status Code : " + statusCode;
        }

        Toast.makeText(getContext(), message, Toast.LENGTH_SHORT).show();
    }
};
```

Refer to *AllReceiptsFragment.java* and *AllReceiptsExtFragment.java*.

## 20 RequestError class included in the smcloudservices.aar

### Method

Name	Description
getMessage	gets the message about the error that occurred during asynchronous execution.
getInternalException	Gets the exception that occurred during the asynchronous execution. (For debugging)

### 20.1 getMessage Method

Gets the message about the error that occurred during asynchronous execution.

#### Declaration

```
public String getMessage();
```

#### Parameter

Name	Description	Object type
-	-	-

#### Return value

Description	Object type
Message about the error that occurred during asynchronous execution.	String

### Example

```
private final RequestCallback mAllReceiptsCallback = new RequestCallback() {
    @Override
    public void onRequestResult(int statusCode, RequestError error) {
        String message;

        if (error != null) {
            message = error.getMessage();
        }
        else {
            message = "Status Code : " + statusCode;
        }

        Toast.makeText(getContext(), message, Toast.LENGTH_SHORT).show();
    }
};
```

Refer to *AllReceiptsFragment.java* and *AllReceiptsExtFragment.java*.

## 20.2 getInternalException Method

Gets the exception that occurred during the asynchronous execution. (For debugging)

### Declaration

```
public Exception getInternalException();
```

### Parameter

Name	Description	Object type
-	-	-

### Return value

Description	Object type
Exception that occurred during the asynchronous execution.	Exception

### Example

```
private final RequestCallback mAllReceiptsCallback = new RequestCallback() {
    @Override
    public void onRequestResult(int statusCode, RequestError error) {
        String message;

        if (error != null) {
            message = error.getMessage();

            Exception exception = error.getInternalException();

            if (exception != null) {
                message = exception.getMessage();
            }
        }
        else {
            message = "Status Code : " + statusCode;
        }

        Toast.makeText(getContext(), message, Toast.LENGTH_SHORT).show();
    }
};
```

Refer to *AllReceiptsFragment.java* and *AllReceiptsExtFragment.java*.



## Appendix A. How to use AllReceipts™ (Guides for Retailers)

Please visit the following URL for details about “AllReceipts™”, FREE digital receipts service from Star Micronics.

[www.allreceipts.com](http://www.allreceipts.com)

You can start using our services immediately after you complete your registration from the following website.

<< **Star Micronics Cloud Retailer Registration site** >>

[www.starmicronicscloud.com](http://www.starmicronicscloud.com)

### 1) Device Registration

Register the device using your registered Star Micronics Cloud account.

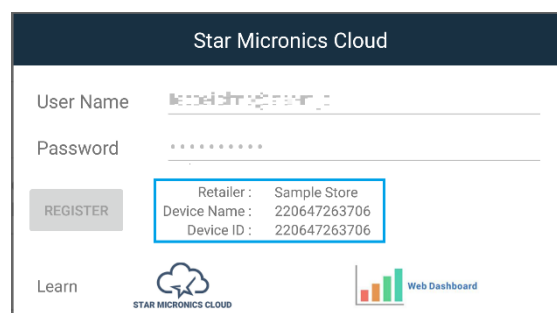
Once you have registered the device, you can use the service of uploading print data to the cloud server and manage the registered device from the Star Micronics Cloud dashboard.

- 2) Enter the username and the password of your registered Star Micronics Cloud account and click “Register Device”.



The screenshot shows the Star Micronics Cloud registration form. It has a dark blue header with the text "Star Micronics Cloud". Below the header, there are two input fields: "User Name" with a placeholder "User Name (Email)" and "Password" with a placeholder "Password". A red box highlights these two fields. Below the input fields, there is a "REGISTER" button, also highlighted with a red box. To the right of the button, there are labels for "Retailer:", "Device Name:", and "Device ID:". At the bottom of the form, there are three links: "Learn", a logo for "STAR MICRONICS CLOUD", and a "Web Dashboard" link with a bar chart icon.

- 3) When the device is registered successfully, the account information of the connected Star Micronics Cloud appears.



The screenshot shows the Star Micronics Cloud registration form after successful registration. The "User Name" field now contains "Sample Store" and the "Password" field contains "\*\*\*\*\*". The "REGISTER" button is now disabled. A blue box highlights the registration details: "Retailer: Sample Store", "Device Name: 220647263706", and "Device ID: 220647263706". The bottom of the form remains the same with "Learn", "STAR MICRONICS CLOUD" logo, and "Web Dashboard" link.