



Android Software Development Kit

How to Use StarIO for POS Printers

This SDK contains a Java Eclipse project for Android devices.

Supported Versions	Supported Star Interfaces	Compatible StarIO JAR File
Android OS 3.1 and Higher	Bluetooth, USB, Ethernet	StarIOPort3.1.jar (Default)
Android OS 2.2, 2.3, 3.0	Bluetooth, Ethernet	StarIOPort3.1.jar (Default)
Android OS 2.1	Bluetooth, Ethernet	StarIOPort.jar

Tools Needed:

- [JDK 6](#)
- [Eclipse](#)
- [Android SDK Manager](#)
- [ADT \(Android Development Tool\) Plugin for Eclipse](#)
- [USB Windows Driver by Android Device Manufacturer](#)
- [StarIO Android SDK](#)




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About this Manual

This manual is designed to help you understand StarIO and how to build an Android application to interact with Star Micronics Thermal POS Printers. 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.

Key Legend:

<i>Warning</i>		Explains potential issues
<i>Avoid Doing This</i>		Explains things not to do
<i>Note</i>		Provides important information and tips

CAUTION:

- Android is a trademark of Google Inc.
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Star Printer Compatibility Chart

The below chart summarizes the Star Printer Models supported on Android Operating Systems.

Android OS Versions 3.1 and higher support USB, Bluetooth and Network Interfaces.
 Android OS Versions 3.0 and lower support Bluetooth and Network Interfaces.

Line Mode / Raster Mode

Star Printer		Android OS Version			Port Discovery	Status	Sample Receipts	Jp Sample Receipts	Open Drawer	1D Barcodes	2D Barcodes	Cut Patterns	Text Formatting	Kanji Text Formatting	Raster Graphics	Sample Images
Model	Interface	2.1	3.0 2.3 2.2	4.1 4.0 3.2 3.1												
TSP100ECO	USB			☺		☺	☺	☺	☺						☺	☺
TSP100U	USB			☺		☺	☺	☺	☺						☺	☺
TSP100GT	USB			☺		☺	☺	☺	☺						☺	☺
TSP100LAN	Ethernet	☺	☺	☺	☺	☺	☺	☺	☺						☺	☺
TSP650	USB			☺		☺	☺	☺	☺	☺		☺	☺	☺	☺	☺
	Ethernet	☺	☺	☺	☺	☺	☺	☺	☺	☺		☺	☺	☺	☺	☺
TSP650II	USB			☺		☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
	Ethernet	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
	Bluetooth	☺*	☺*	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
FVP10	USB			☺		☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
	Ethernet	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
TSP700II	USB			☺		☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
	Ethernet	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
TSP800II	USB			☺		☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
	Ethernet	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
TUP500	USB			☺		☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
	Ethernet	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺
TUP900	USB			☺		☺	☺	☺	☺	☺		☺	☺	☺	☺	

*Bluetooth interface: SSP connection is supported by Android version 2.3.3 later.
 When use Android version 2.3.2 and lower, use PIN code for connection.

Note 1: The TSP100 Series does not support the 1D Barcodes, 2D Barcodes, Cut Patterns, and Text Formatting samples in this application. These samples were written using Star Line Mode, while the TSP100 natively understands Raster Mode. Kindly reference Star Micronics' Raster Mode commands in the programming manual for the Cut and Text Formatting commands. It is recommended to print barcodes as graphics for this model.

Note 2: This SDK offers the most popular features, but not all printer functionality has been included (such as Presenter Options for the TUP500). The commands not included in this SDK application are available in the Line Mode Programming Manual.

Connecting a Star POS Printer to an Android Device

These screenshots were captured using an Android 4.0 tablet. Screenshots and wording can vary between Android operating systems.

Network Interface

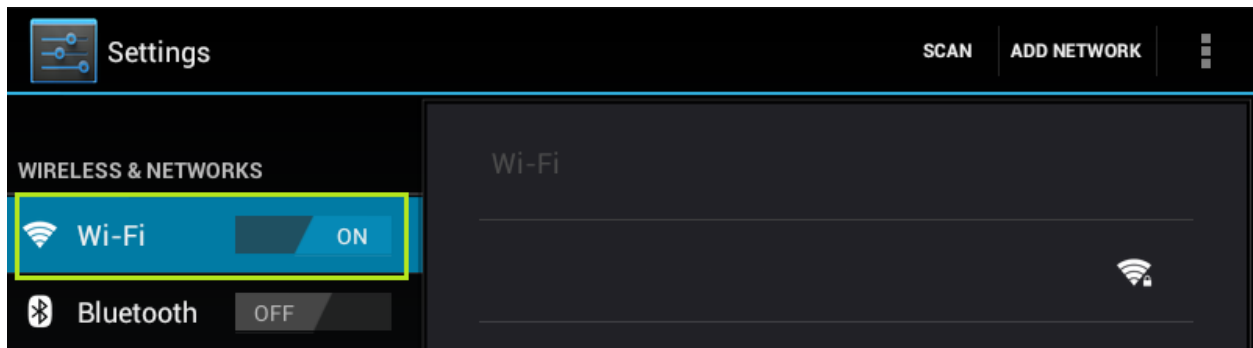
1. Assign an IP Address to the Star Printer and connect it to the network. Standard Star Printers do not ship with an IP Address pre-assigned; this can be set by a DHCP network, or using the Configuration Utility on the Installation CD that shipped with the printer. If the CD is not available, it can be downloaded from [Star's website](#).

TSP100 Models: *future*PRNT

TSP650/TSP650II/FVP10/TSP700II/TSP800II/TUP500/TUP900: StarPRNT

TSP1000: Individual Driver Package

2. Tap Settings.

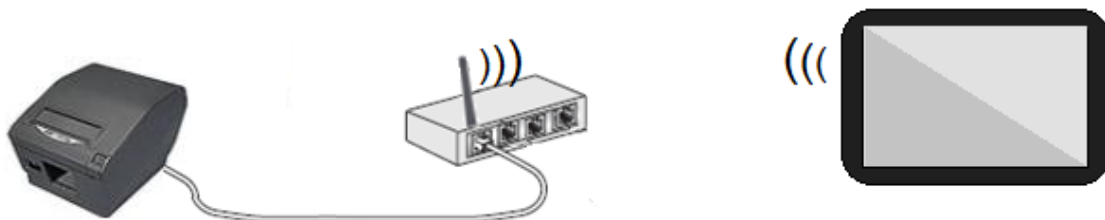


3. Ensure Wi-Fi is enabled.

4. Connect to the same network the Star Printer is on.

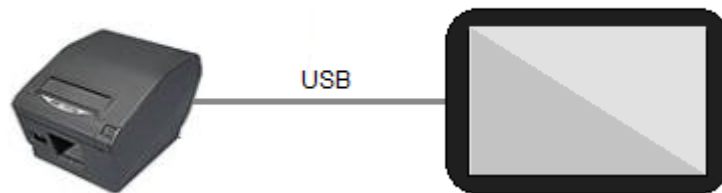
5. Use Search or enter the port name and IP Address in the PortName field.

6. No further settings are necessary to connect the printer as the Android device will output data directly to the printer's TCP/IP port.



USB Interface

1. The Android device must be running OS Version 3.1 or higher. (Versions 3.0 and lower are incompatible with USB tethering to external devices like printers.)
2. No specific Star Micronics driver or printer software needs to be installed on the Android device.
3. 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.
4. [Enter the port name in the PortName field.](#)



USB Access Permission



Depending on Android device, the above message may appear the first time you interact (get status or print) with the Star USB Printer.

To remedy this, enter the following code into the AndroidManifest.xml and device_filter.xml file.

[AndroidManifest.xml]

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

[device_filter.xml]

```
<?xml version="1.0" encoding="utf-8"?>
```

```
<resources>
```

```
  <usb-device class="255" subclass="66" protocol="1" />
```

```
  <usb-device vendor-id="1305" product-id="0001" /> ... *1
```

```
  <usb-device vendor-id="1305" product-id="0002" /> ... *2
```

```
  <usb-device vendor-id="1305" product-id="0003" /> ... *3
```

```
  <usb-device vendor-id="1305" product-id="0005" /> ... *4
```

```
  <usb-device vendor-id="1305" product-id="0009" /> ... *5
```

```
  <usb-device vendor-id="1305" product-id="0010" /> ... *6
```

```
</resources>
```

*1 IFBD-HU05/06, IFBD-HU07/08 - printerClass

*2 IFBD-HU05/06, IFBD-HU07/08 - vendorClass

*3 TSP100U/ECO - printerClass

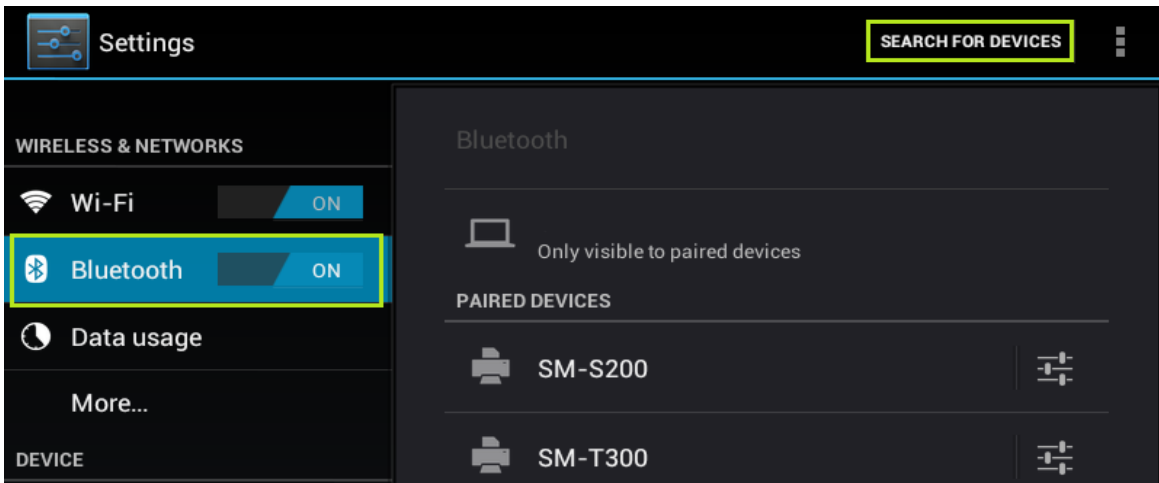
*4 TSP100GT - printerClass

*5 FVP10 - printerClass

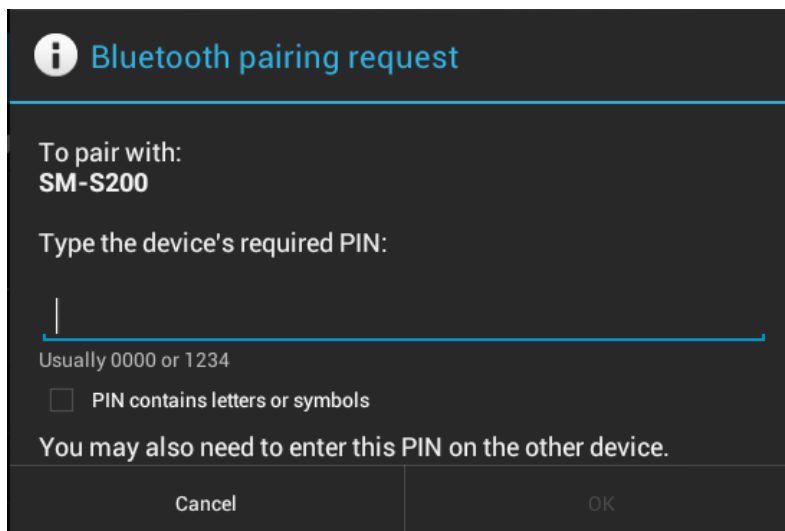
*6 FVP10 - vendorClass

Bluetooth

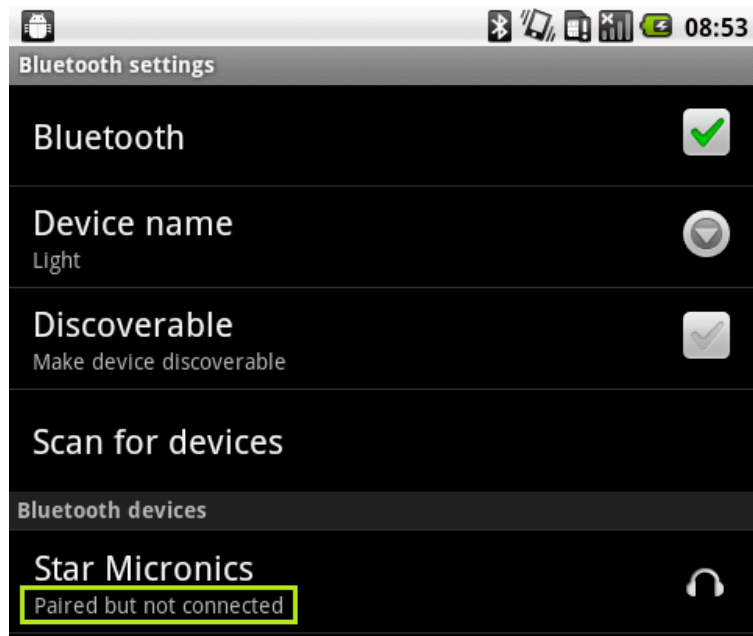
1. Tap Settings.



2. Ensure Bluetooth is enabled and the printer is powered on.
3. Tap Bluetooth to access its settings.
4. Tap Search for Devices. Find the printer 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 Printers is "1234". (If use the "SPP", do not need this operation.)



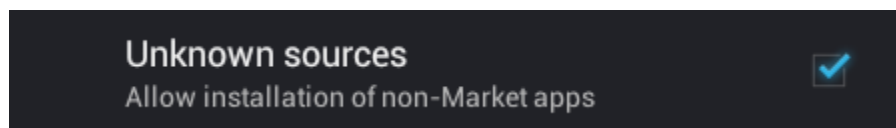
6. Older Android Operating Systems, such as V2.2 in the above screenshot, display the message "Paired but not connected". This can be neglected as connection is established at the time of printing.

Configuring an Android Device for Development

1. Tap Settings.



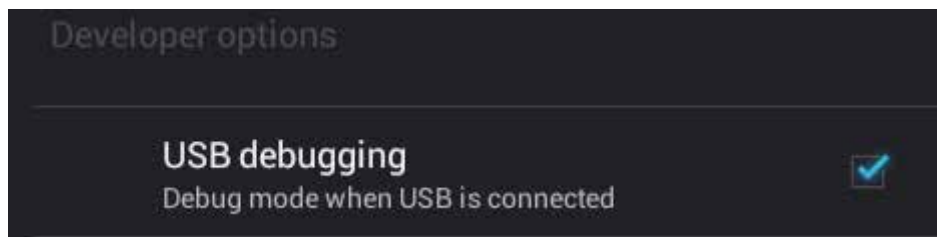
2. Tap Security.



3. Enable Unknown sources.



4. Tap Developer options.



5. Enable USB debugging.

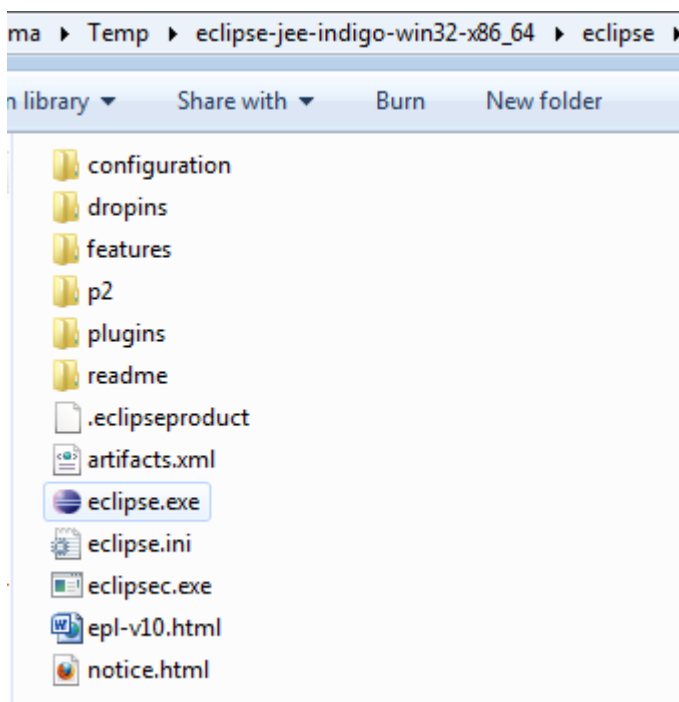
Importing and Running the StarIO Android SDK

It is assumed Eclipse has already been configured to support Android development. Should you need assistance with this, refer to Star's Android Setup Guide in the documentation folder of this SDK package.

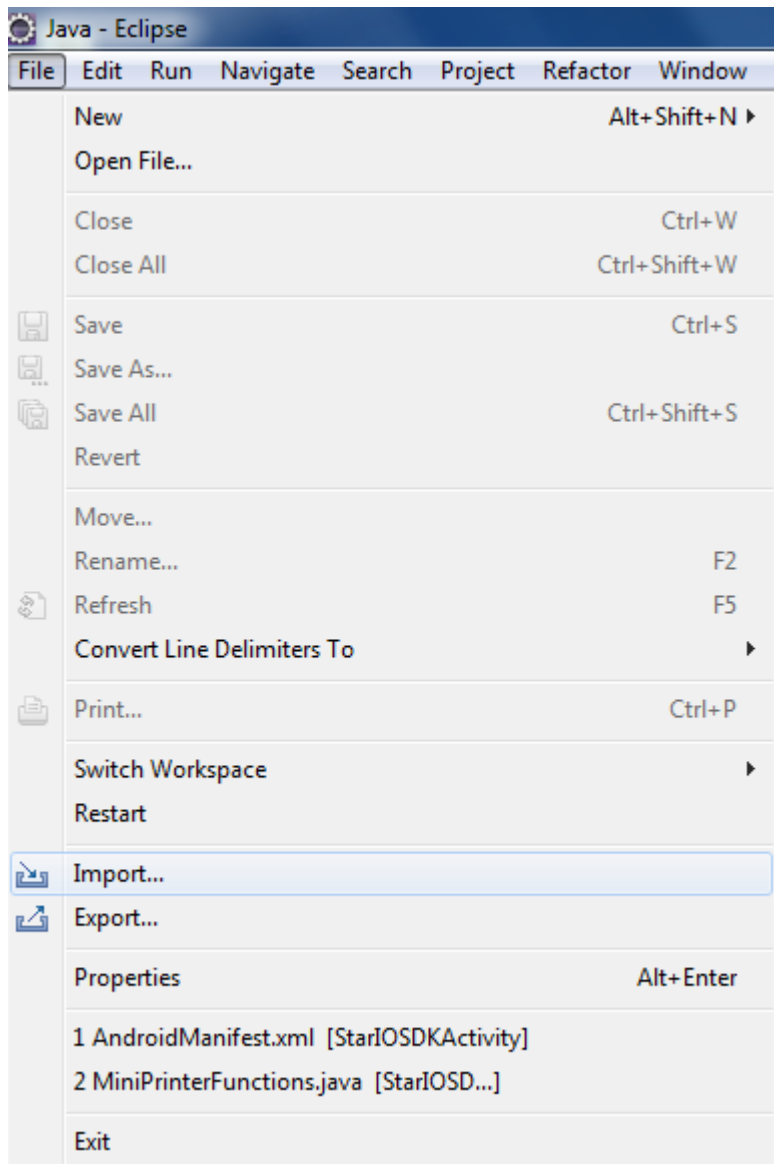
This section will explain:

1. How to import the Android SDK project into Eclipse.
2. Enabling debug mode in Eclipse.
3. Running the project.

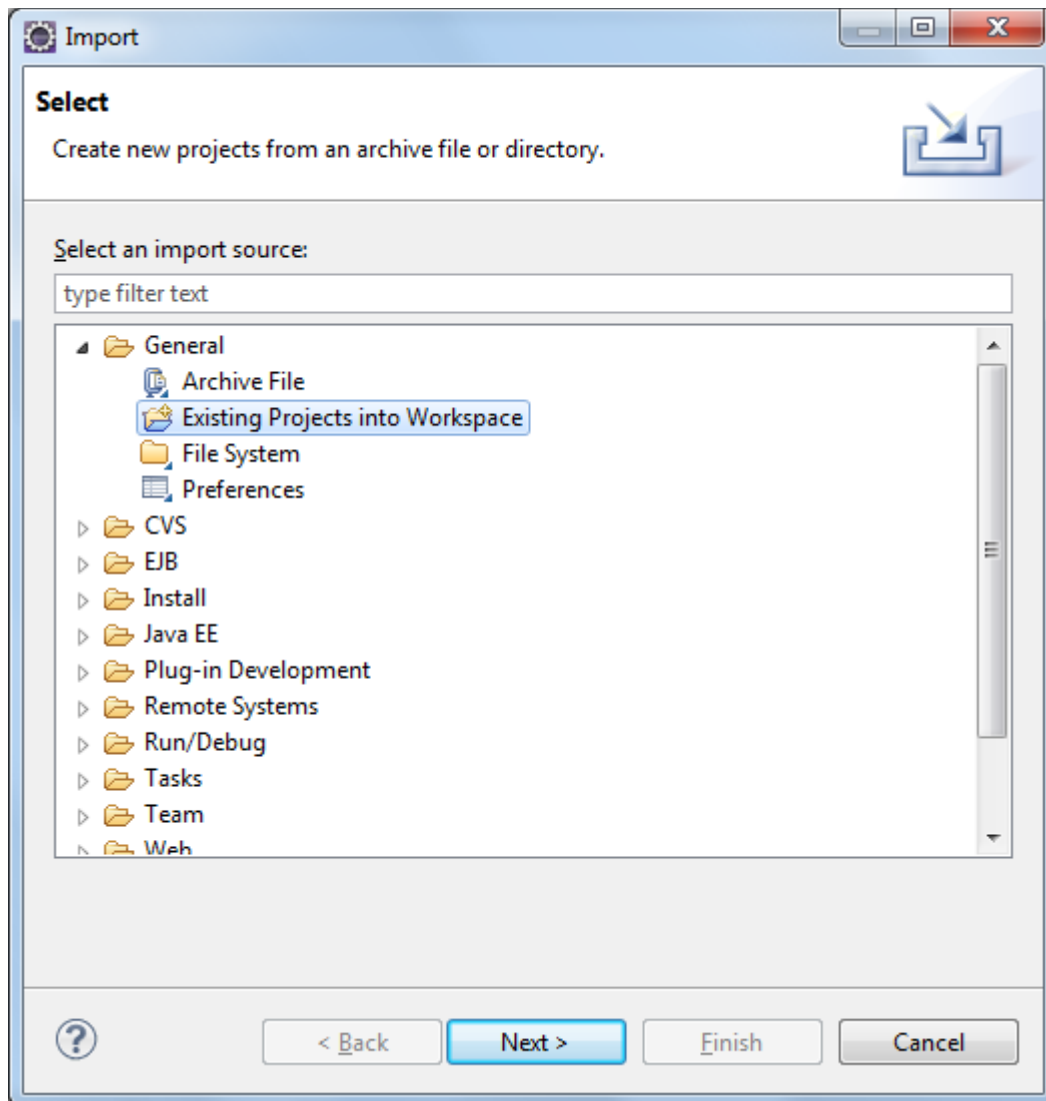
How to import the Android SDK project into Eclipse:



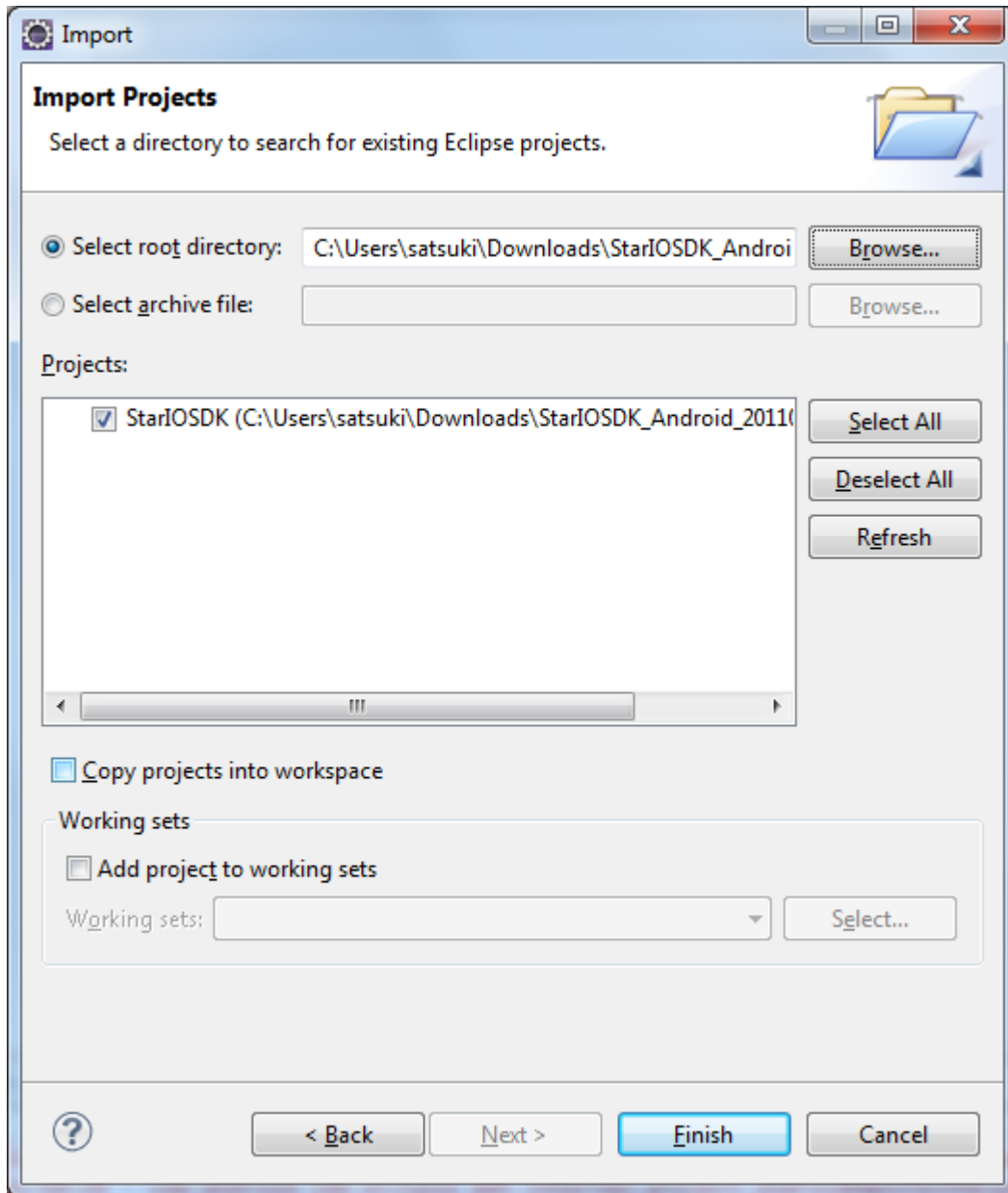
1. Execute Eclipse.



2. File > Import

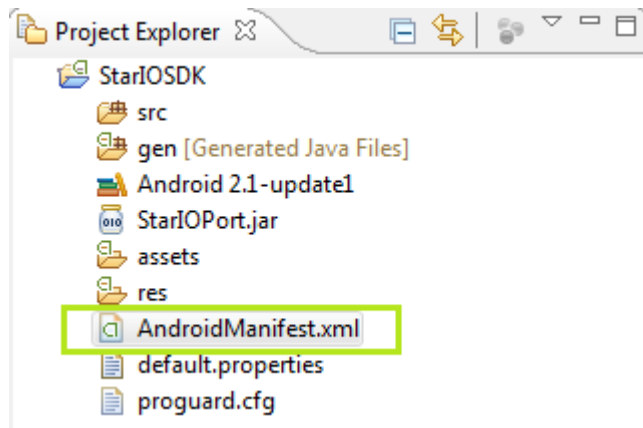


3. General > Existing Projects into Workspace

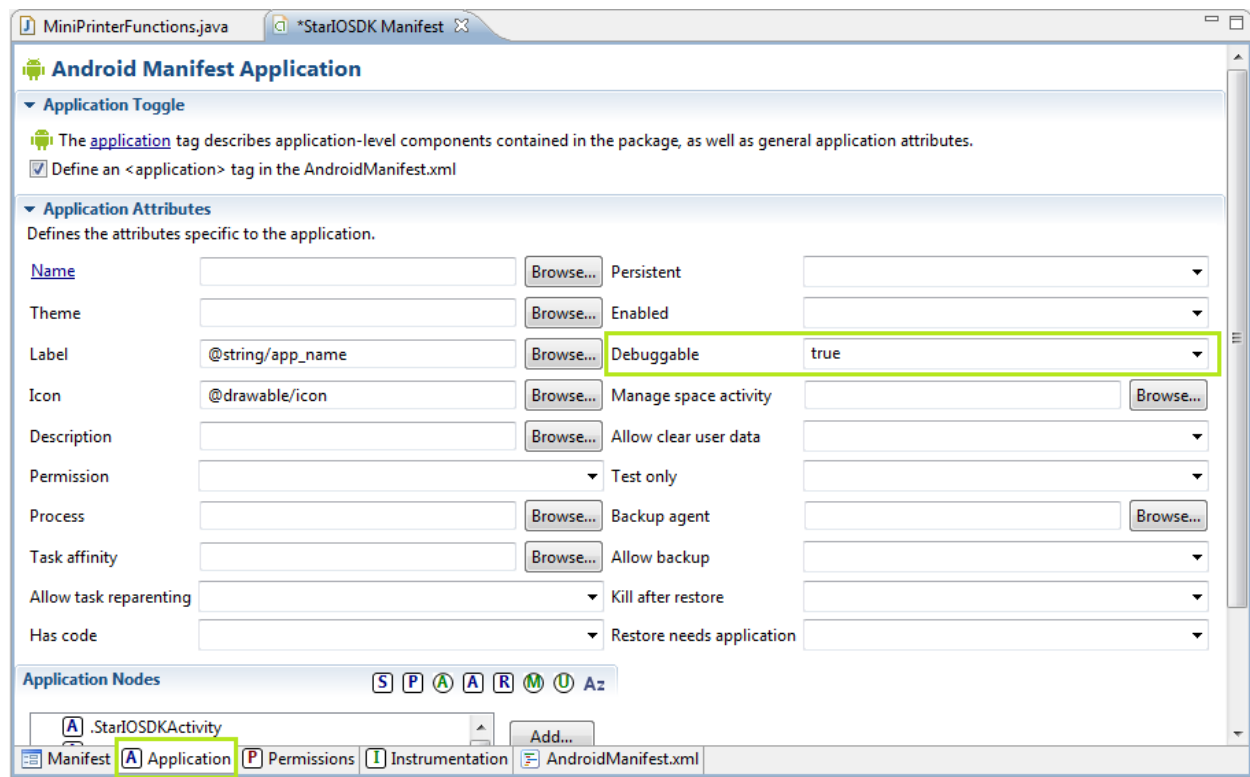


4. Browse to the location where the Star SDK is saved. Click Finish.

Enabling debug mode in Eclipse:

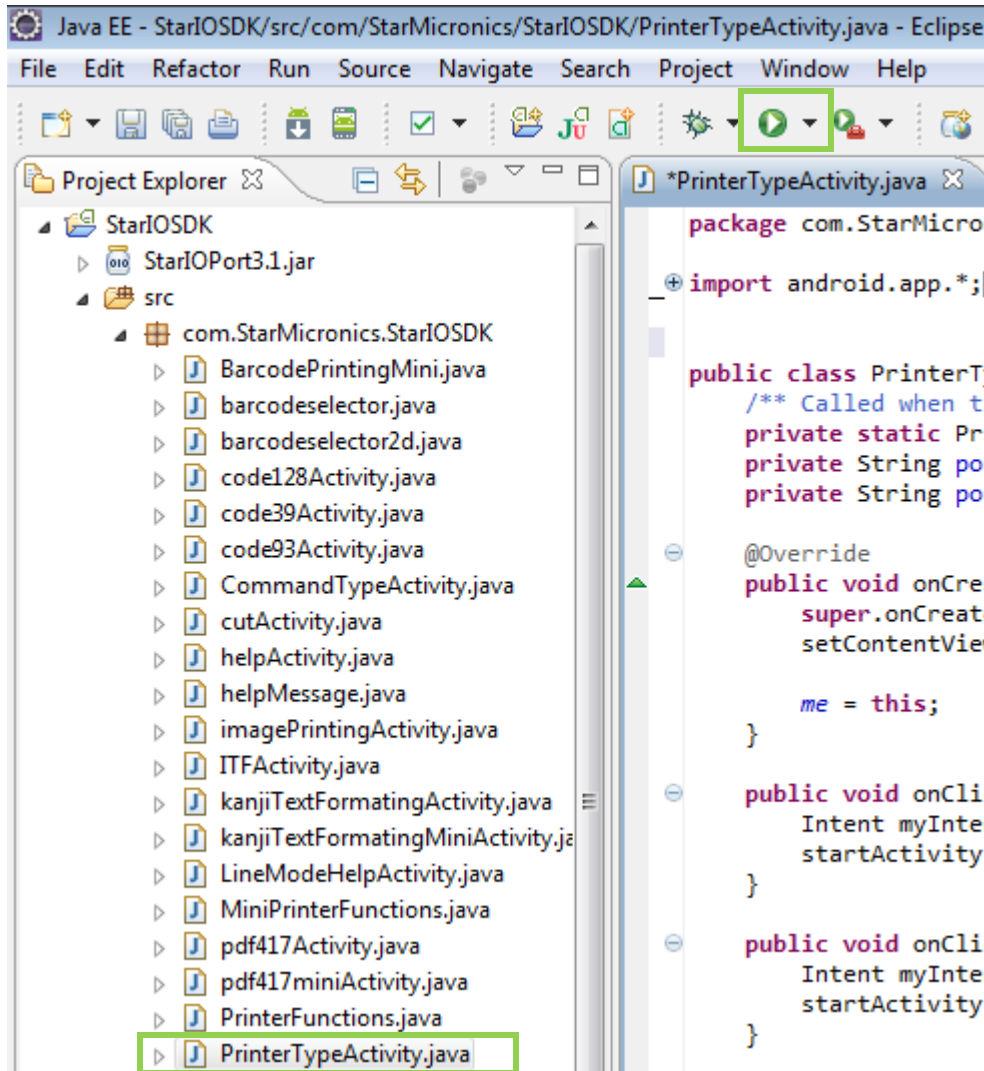


1. Click AndroidManifest.xml.



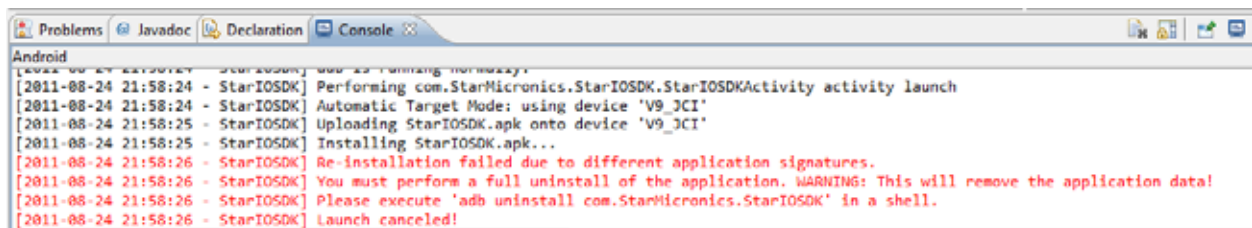
2. Click the Application tab.
3. Set Debuggable to true.

Running the project:



1. Choose PrinterTypeActivity.java.

2. Click the green arrow.



Tip: The above error occurs if you attempt to reinstall the .apk from a different host. To remedy it, delete the application on your Android device and rerun the app.

Using the SDK with Star Micronics POS Printers

Please make sure you have a [compatible Star Micronics POS Printer Model](#).

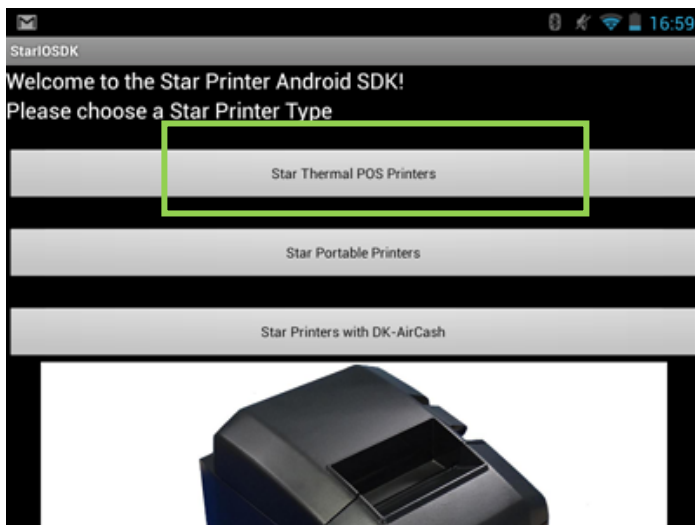
Port Name and Interface Relation:

StarIO uses specific port names to identify what port will be used. If these port names are not entered correctly, the application will fail to communicate with the printer.

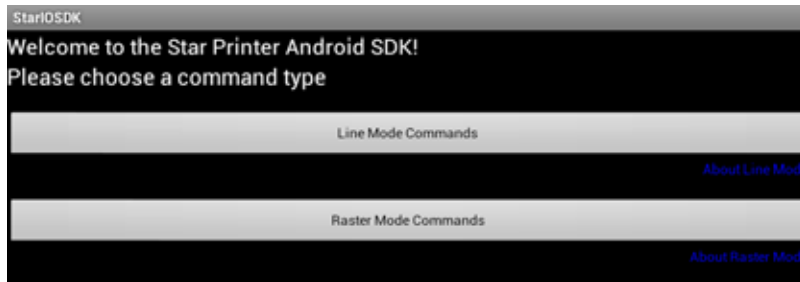
Interface	Port Name	Port Settings
Network I/F (TCP/IP)	TCP:IP Address	
USB	USB:	
Bluetooth	BT:	;p (*)
	BT:Device Name	;p (*)
	BT:Printer MAC Address	;p (*)

(*If use the "PIN Code" by Bluetooth Interface, need the [Port Settings](#). No [Port Settings](#) are required when using other Interface and "SPP" by Bluetooth Interface.)

Using a POS Printer



1. Tap "Star Thermal POS Printers".



2. Tap the desired command type to access the samples for that mode. The mode chosen results in which samples can be sent to the printer.

Line Mode Printers accept commands and print data line-by-line. The data is transferred to the printer in small pieces, allowing developers to customize receipt output with commands in any place they are needed. This mode alone can only make use of Device Fonts installed on the printer, which can be less visually appealing than TrueType Fonts.

Line Mode is supported by these models: TSP650, TSP650II, FVP10, TSP700II, TSP800II and TUP500

Raster Mode Printers receive all print data graphically, allowing them to natively support the printing of engaging TrueType Fonts and output receipts at a lightning fast pace. Coding Raster commands is more complicated than Line Mode commands, as Raster commands require the entire receipt to be generated in graphical data before being sent to the printer.

Raster Mode is supported by these models: TSP100ECO, TSP100U, TSP100PUSB, TSP100LAN, TSP100GT, TSP650, TSP650II, FVP10, TSP700II, TSP800II and TUP500

Ethernet and Wireless LAN Printers



1. Tap "Port Discovery" to find all connected Star Printers. Alternatively, the IP Address can be manually typed into the "PortName" field.

If manually entered, type: **TCP:<IP Address>** without brackets

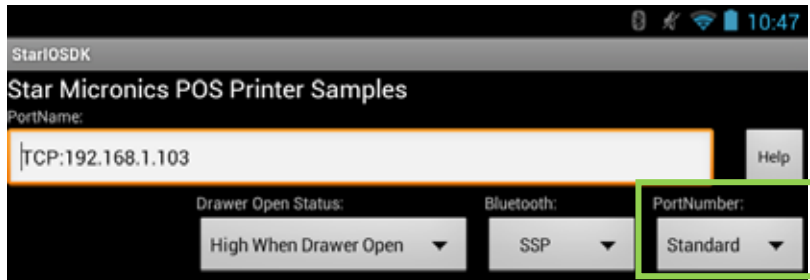


2. Tap the interface type of the printer you want to connect to.

When tapping "LAN", the model names of Ethernet printers you can connect to be displayed.

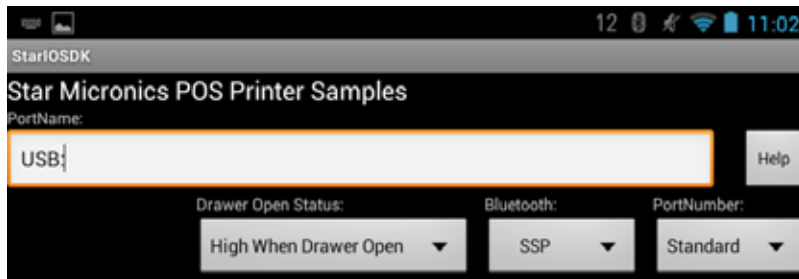


3. Tap the name of printer you want to connect to. The printer's MAC Address and model name are displayed beneath the IP Address.



4. If necessary, configure the TCP Port by clicking the "Standard" dropdown. This sample application allows you to choose any port from 9100 to 9109. Configuring the port might be necessary when using a router such as Apple's AirPort Express.

USB Printers



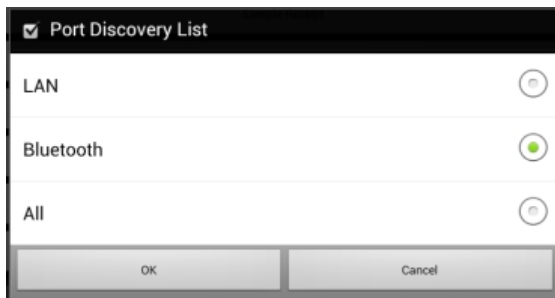
Only the port name is needed for USB communication; no details after the name are necessary. Simply add "USB:" to communicate.

USB: No port details needed.

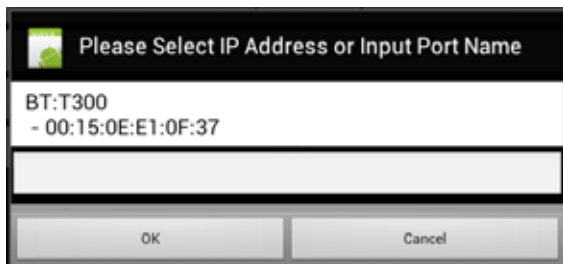
Bluetooth Printers - Port Discovery



1. Tap "Port Discovery" to find all connected Star Printers. Alternatively, the device name can be manually typed into the "PortName" field. [See here for details.](#)

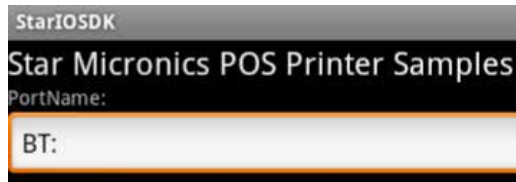


2. Tap the interface type of the printer you want to connect to.
When tapping "Bluetooth", the port names of paired printers you can connect to are displayed.

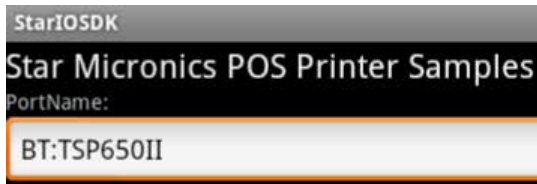


3. Tap the name of printer you want to connect to.

Bluetooth Printers - Manual Port Entry



Above: No parameters needed if using only one Star Bluetooth Printer

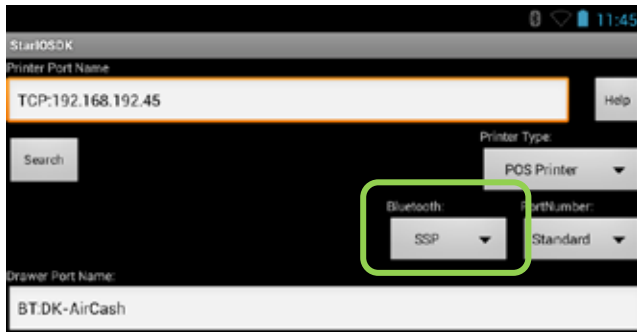


Above: Using the Device Name as the parameter

There are three types of port details that can be used for Star Bluetooth Printers:

1. **BT:** If only one Star Bluetooth Printer is connected, using "BT:" with no parameters will automatically communicate to the only printer connected.
2. **BT:<DeviceName>** Add the full device name after "BT:" without brackets. This is case sensitive so ensure it matches exactly.
3. **BT:<MAC Address>** Add the printer's MAC Address after "BT:" without brackets.

Bluetooth Device - Security Method



This setting shifts the Bluetooth API used for the Connect function of StarIO.

Select the same security method which was used when your Star Bluetooth devices were paired. When the SSP is selected, "" (the empty string) will be specified for the portSetting parameter of the getPort method. When the PINCode is selected, ";p" will be specified for the portSetting parameter of the getPort method.

Using an Android emulator (AVD)

The operation of SDK can be checked by using the AVD (Android Virtual Device). It is impossible to communicate with Star Bluetooth/USB printers.

Overview of How This Android SDK is Designed

This overview will touch briefly on key components of the SDK.

All functionality is located in the src folder in the com.StarMicronics.StarIOSDK package.

Run the program by selecting `PrinterTypeActivity.java`; this source code is the starting point for both POS and Mobile Printers.

See how specific functions work by clicking on the other source files. For example, “`code128Activity.java`” corresponds to the 1D barcode Code128 in the GUI.

It is important to note that not every function is available for both printer types. The first page of each SDK manual shows which functions are supported. They are listed again here for convenience:

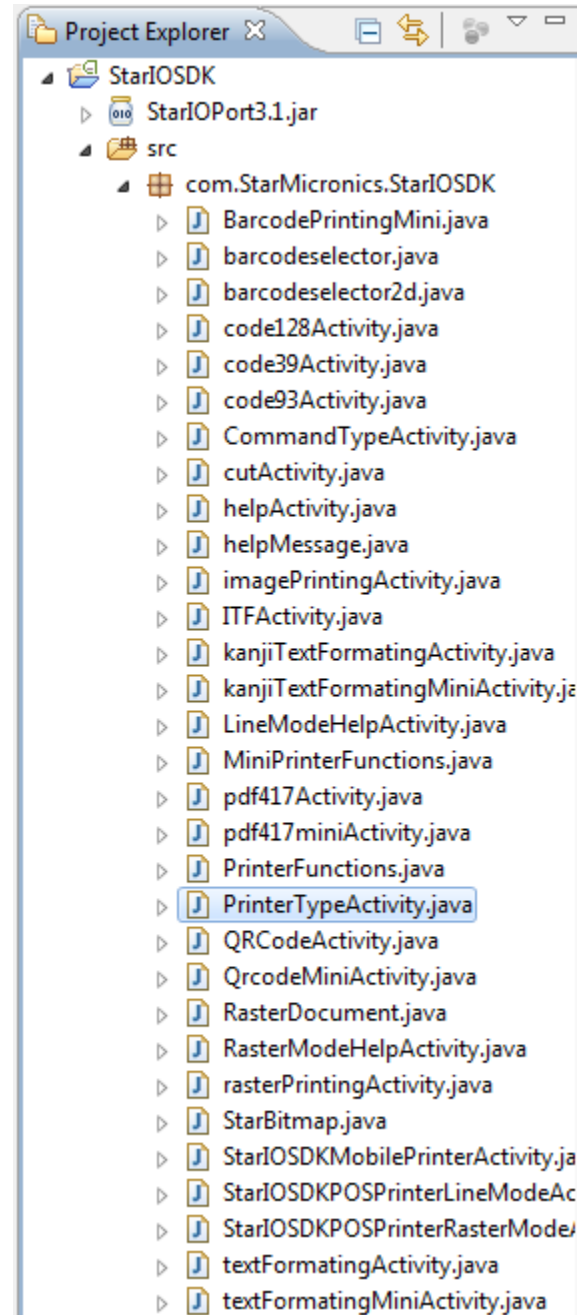
POS Printers

- No Magnetic Stripe Reader support

Portable Printers

- No Cash Drawer support
- No Cut Pattern support

In addition, source files containing “Mini” are for portable printer models only. `StarBitmap.java` applies to both printer types.



StarIO - (StarIOPort3.1.jar)

The file StarIOPort3.1.jar is a library that you can include into your Java projects to expose StarIO methods.

Selecting a StarIO Library:

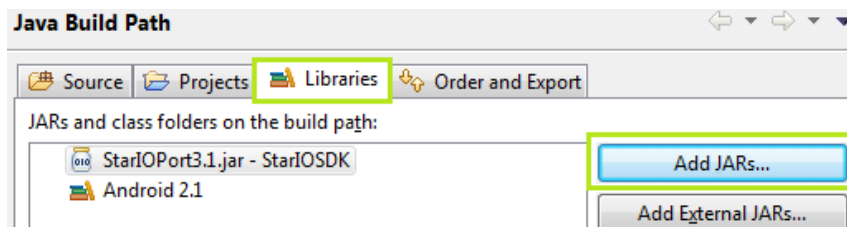
The StarIO SDK contains two library files. Use the one which corresponds to the Android OS Version your application is being developed for.

Supported Versions	Supported Star Interfaces	Compatible StarIO JAR File
Android OS 3.1 and Higher	Bluetooth, USB, Ethernet	StarIOPort3.1.jar (Default)
Android OS 2.2, 2.3, 3.0	Bluetooth, Ethernet	StarIOPort3.1.jar (Default)
Android OS 2.1	Bluetooth, Ethernet	StarIOPort.jar

How to include StarIO into your project:

To include this library into your project:

1. Drag the appropriate StarIO library file into the Project Explorer from the SDK package
2. Right click the project folder and choose Properties
3. Click Java Build Path



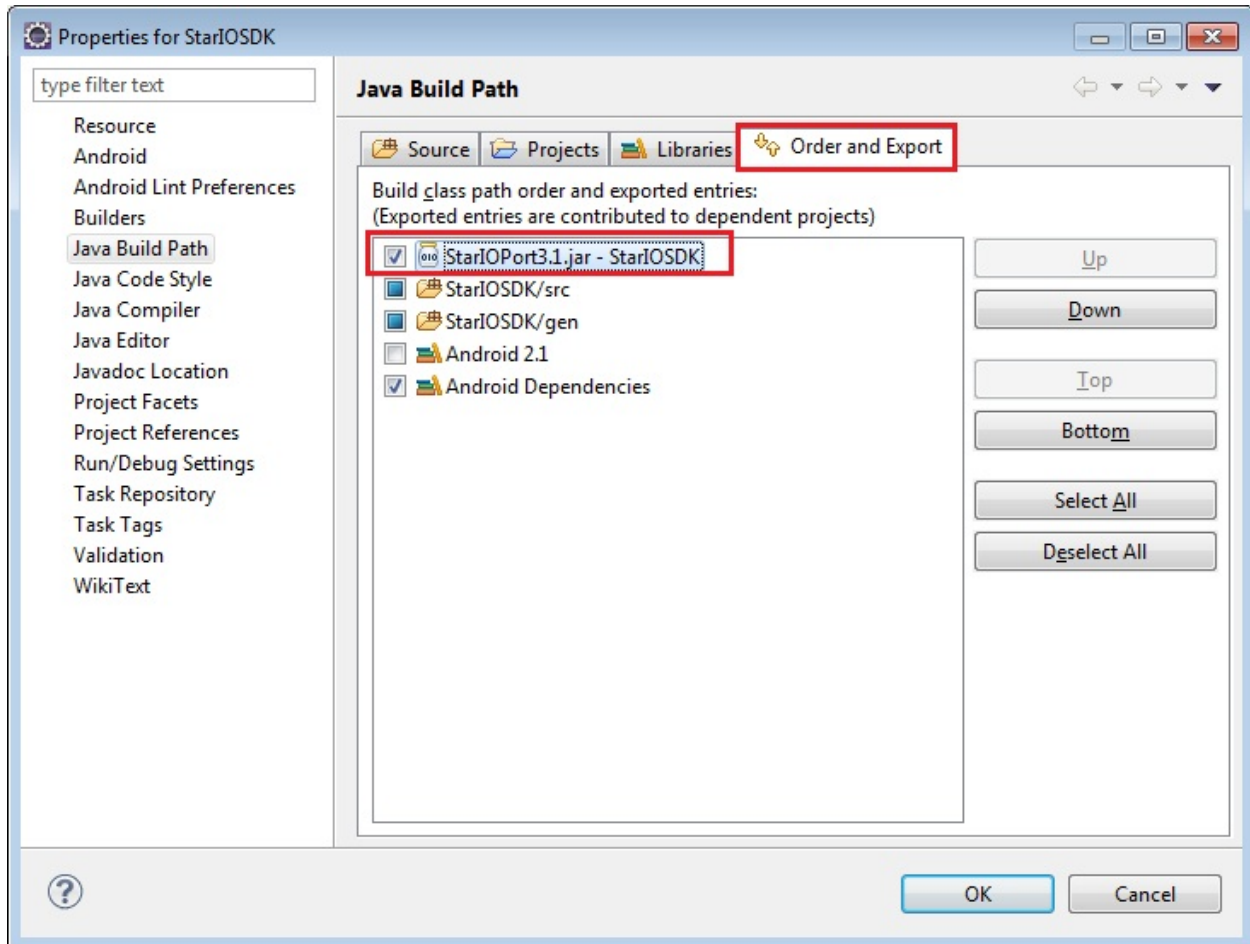
4. Click Libraries and the Add JARs button
5. At the top of your main code add:

```
import com.starmicronics.stario.StarIOPort;  
import com.starmicronics.stario.StarIOPortException;  
import com.starmicronics.stario.StarPrinterStatus;
```
6. Now you can access all of StarIO's methods!

Android SDK Tools r17 and Higher:

Library management has been changed starting from Android SDK Tools r17. It is essential to order the StarIOPort JAR before StarIOSDK/src. This method presented no problem from Android SDK Tools r16 and lower, but caused the application to crash beginning with r17.

Star Micronics rectified this issue in the StarIO Android SDK V2.4. Please ensure the same caution is taken when using the StarIOPort JAR in your own application.



1. Right click the project name and select properties
2. Click Java Build Path and then Order and Export
3. Highlight the StarIOPort JAR and relocate it to above the application code

Android OS V2.2 and Higher:

Include the default library: StarIOPort3.1.jar

Upon including this library, the StarIO SDK application will successfully run. No modifications to the source code are necessary.

Android OS 3.1 and higher: Supports Bluetooth, USB, and Ethernet connections.

Android OS 2.2, 2.3, 3.0: Supports Bluetooth and Ethernet connections.

Android OS V2.1:

Include the legacy library: StarIOPort.jar

Upon including this library, the source code of the StarIO SDK application must be modified.

```
PrinterFunctions.java X
StarIOPort port = null;
try
{
    /*
     * using StarIOPort3.1.jar (support USB Port)
     * Android OS Version: upper 2.2
     */
    port = StarIOPort.getPort(portName, portSettings, 10000, context);
    /*
     * using StarIOPort.jar
     * Android OS Version: under 2.1
     */
    port = StarIOPort.getPort(portName, portSettings, 10000);
}
```

1. Comment this line: `port = StarIOPort.getPort(portName, portSettings, 10000, context);`

2. Uncomment this line: `port = StarIOPort.getPort(port Name, portSettings, 10000);`

This allows for the use of the legacy StarIOPort.jar library.

Android OS 2.1 supports Ethernet and Bluetooth connections.

StarIO Methods Overview:

Property

StarIO Port class includes 3 properties; `portName` (String), `portSettings` (String), and `Timeout` (int).



These 3 variables will be “read only” if accessed directly. To assign them use [getPort\(portName, portSettings, timeout\)](#); which will allow you to pass in variables to this methods which then assigns the 3 class variables with values.

`portName` is what you will be using to specify the port of communication to the printer.

Ex. TCP:192.168.1.2 / USB:

`portSettings` should be left blank for POS Printers.

`timeout` is a millisecond 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)

[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

[Use the “PIN Code”, when pairing Bluetooth Printer]

Set “;p” for `portSettings`.

getPort

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

getPort is what you will be using to “open” the port to the printer. Using one of the valid inputs for portName and portSettings as mentioned previously before this, you can pass your connection string into the StarIO class so that it will correctly set its private variables.

```
//The following would be an actual usage of getPort:
StarIOPort port = null;
try
{
    port = StarIOPort.getPort(portName, portSettings, 10000);
}
catch (StarIOPortException e)
{
    //There was an error opening the port
}
```

IPort is a part of StarIO and this will allow you to create a “port” handle. The above example shows the port being created and set to null then being assigned the actual port hook on the following line that contains getPort.



Always use a `try, catch` when using `getPort`. If the port cannot be opened because of connection problems, your program will crash unless you use a `try, catch` like the above example.

searchPrinter

```
public static ArrayList<PortInfo> searchPrinter(String target) throws StarIOPortException
```

searchPrinter detects printers in LAN and return search result as ArrayList<PortInfo>.

Set "TCP:" as Argument value target.

PortInfo class of return value includes, PortName, MAC address, and you can get them by String getPortName(), String getMacAddress(), and String getModelName() method.)

And you can use Port Name as Argument value of getPort.

```
//The following would be an actual usage of searchPrinter:
try
{
    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)
{
    //There was an error opening the port
}
```

This sample shows "detect printer in LAN as a list, and output those information to log.

Tag	Text
LOG	Port Name:TCP:192.168.1.123
LOG	Mac Address: 00:11:62:00:03:58
LOG	Model Name: TSP113 (STR_T-001)

readPort

```
public int readPort(Byte[] readBuffer, int offset, int size)
```

throws `StarIOException`

This method reads data from the device. Only use this if you really need to read raw bytes from the printer.



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

Parameters:

`readBuffer` - A Byte Array buffer into which data is read.

`offset` - specifies where to begin writing data into the `readBuffer[]`

`size` - Total number of bytes to read.

Returns:

The number of bytes that were actually 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.

Throws:

`StarIOException` - when a communication failure occurs

releasePort

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

This function closes a connection to the port specified.

Parameters:

`port` - `StarIOPort` type representing a previously initialized port.



When do not send the data, release (close) ports.
Leaving a port open will cause future calls to open the port to fail.



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`.

writePort

```
public int writePort(Byte[] writeBuffer, int offset, int size)
```

throws `StarIOException`

This method writes data to the device. Use this to print to the printer, send commands, etc. The following is an example of how to use this method:

Please keep in mind this is the simplest way to send data to the printer. The SDK has code in `printToPrinter` that is more complex than this but that code block will show you how to verify data transmission to the printer whereas this code is just dumping it:

```
//Set a byte array to send to the printer
//command = { A, B, C, D, Feed 3mm, Full Cut}
Byte[] command = new Byte[]{ 0x41, 0x42, 0x43, 0x44, 0x1B, 0x7A, 0x00, 0x1B, 0x64, 0x02 };
try
{
    port.writePort(command, 0, command.length);
}
catch (StarIOException e)
{
    //There was an error writing to the port
}
```

Remember to use a `try, catch` for safe programming practices.

Parameters:

`writeBuffer` - Contains the output data in a byte array.

`offset` - Specifies where to begin pulling data from `writeBuffer` .

`size` - Number of bytes to write.

Returns:

The number of bytes that were actually written. Under some interface types, this function will succeed even when no data was written out. Your application should call this function a limited number of times until all the data has been written out or until an application determined retry threshold has been reached.

Throws:

`StarIOException` - when a communication failure occurs

retrieveStatus

```
public StarPrinterStatus retrieveStatus ()
```

throws `StarIOException`

This method retrieves detailed status from the printer with StarIO.

Returns:

`StarPrinterStatus` structure giving the current device status

Throws:

`StarIOException` - when a communication failure occurs

This method uses a class structure that is included with StarIO called `StarPrinterStatus`

This structure gives the printer's status in both boolean and binary form.

Create the `StarPrinterStatus` object in your project by doing the following:

```
StarPrinterStatus status = port.retrieveStatus();
if (status.offline == false)
{
    if (status.blackMarkError == true) {
        //There was a black mark error
    }

    if (status.compulsionSwitch == true) {
        //Cash drawer is open
    }
    else {
        //Cash drawer is closed
    }
}
else {
    //If true, then the printer is offline.
}
```

beginCheckedBlock

```
public StarPrinterStatus beginCheckdBlock () throws StarIOPortException
```

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.

Returns:

`StarPrinterStatus` structure giving the current device status

Throws:

`StarIOPortException`

- when a communication failure occurs
- when the printer is off line

See the sample code [here](#).

endCheckedBlock

```
public StarPrinterStatus endCheckdBlock () throws StarIOPortException
```

This method is used in combination with beginCheckedBlock and checks the completion of printing. If an error has occurred while printing, can get the return value which is the current device status when this method is executed. You must run beginCheckedBlock just before sending print data.

Returns:

`StarPrinterStatus` structure giving the current device status

Throws:

`StarIOPortException`

- An error sending the command (such as Off-Line)
- No response for the completion of printing from a printer within the timeout
Timeout length is specified by getPort, or is 10 seconds if specified less than 10 seconds.

See the sample code [here](#).

```
try
{
    port = StarIOPort.getPort(portName, portSettings, 10000, context);

    //Start checking the completion of printing
    StarPrinterStatus status = port.beginCheckedBlock();

    //Printing
    byte[] command = PrinterFunctions.createPrintData(paperWidthInch);
    port.writePort(command, 0, command.length);

    //End checking the completion of printing
    status = port.endCheckedBlock();

    if (status.offline == true) {
        //If true, then the printer is offline.
    }
}
catch (StarIOPortException e)
{
    Log.d("StarIOSample", "An timeout error has occurred during printing.");
}
finally
{
    if (port != null)
    {
        try
        {
            StarIOPort.releasePort(port);
        }
        catch (StarIOPortException e) {}
    }
}
```

Status List of the class structure **StarPrinterStatus**

Member name	Contents	Type	Detail
blackMarkError	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.
compulsionSwitch	Compulsion SW	boolean	You can check status of CashDrawer (Open or Close) " true " : Compulsion SW is pressed. " false " : Compulsion SW is not pressed.
coverOpen	Cover Status	boolean	You can check status of Cover " true " : Cover is opened. " false " : Cover is closed.
cutterError	Auto-cutter Error	boolean	You can check status of Cutter " true " : Cutter error occurs. " false " : Cutter error does not occur.
etbAvailable	ETB available or not	boolean	" true " : available to use " false " : not available to use
etbCounter	ETB Counter	int	You can get current value of ETB
headThermistorError	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.
offline	ONLINE/OFFLINE Status	boolean	You can check status of Online or offline. " true " : Printer is Offline. " false " : Printer is Online
overTemp	Stopped by high head temperature	boolean	" true " : Printer is stopped by head temperature. " false " : Printer is not stopped by head temperature.
presenterPaperJamError	Presenter Paper Jam Error	boolean	You can check status of Paper Jam in Presenter. " true " : Paper jam occurs in presenter . " false " : Paper jam does not occur in presenter .
presenterState	Presenter Paper Position	int	You can check status of Presenter. 0 : State where there is no paper in presenter 1 : State where paper is supplied (loop state) 3 : State where paper is discharged (Can be pulled out) 6 : State where paper is recovered 7 : State where paper is pulled out.
raw	Byte column of status	byte[63]	Byte column of status (example : HEX 23 86 00 00 00 00 00 00)
rawLength	raw length	int	raw length
receiptPaperEmpty	Paper end	boolean	" true " : Paper end. " false " : Paper does not end.
receiptPaperNearEmptyInner	Paper Near-end (Inner Side)	boolean	" true " : Paper near-end. " false " : Paper does not near-end.
receiveBufferOverflow	Receive Buffer Overflow	boolean	You can check status of recieved Buffer. " true " : Received buffer is full. " false " : Received buffer is not full.
unrecoverableError	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.)
voltageError	Electric Voltage Error	boolean	" true " : Printers detects an abnormal power supply voltage. " false " : Printers does not detect an abnormal power supply voltage.

Class structure **StarPrinterStatus** Supported

Member name	TSP 100 LAN	TSP 100 U	TSP 100 GT	TSP 100 IIU	FVP 10	TSP 650	TSP 650 II	TSP 700 II	TSP 800 II	TUP 500	TUP 900
blackMarkError					✓			✓	✓	✓	✓
compulsionSwitch	✓	✓	✓	✓	✓	✓	✓	✓	✓		
coverOpen	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
cutterError	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
etbAvailable	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
etbCounter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
headThermistorError										✓	✓
offline	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
overTemp	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
presenterPaperJamError										✓	✓ After FW ver1.2
presenterState										✓	✓
raw	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
rawLength	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
receiptPaperEmpty	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
receiptPaperNearEmptyInner					✓	✓	✓	✓	✓	✓	✓
receiveBufferOverflow					✓	✓	✓	✓	✓	✓	✓
unrecoverableError	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
voltageError										✓	✓

StarIO Android SDK Functionality

Overview of this SDK functionality and StarIO Printer Commands

All of these commands can be found in the Star Line Mode Command Manual.

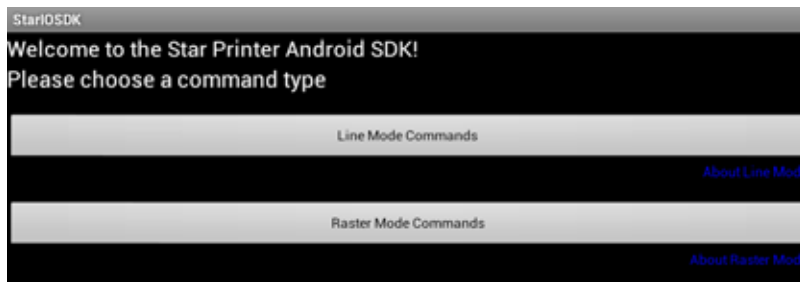
This SDK also has page and section references to the Line Mode Manual for more information so please download and study it if you need more detail on a specific command.

Choosing a Printer and Communication Type

1. Tap "Star Thermal POS Printers" .



2. Select "Line Mode Commands" or "Raster Mode Commands". [The difference is detailed here.](#)



Supported Samples by Command Type

Line Mode Command Samples Include:

[Port Discovery](#)

[Get Status](#)

[Sample Receipt](#)

[JP Sample Receipt](#)

[Open Cash Drawer](#)

[1D Barcodes](#)

[2D Barcodes](#)

[Cut](#)

[Text Formatting](#)

[JP Kanji Text Formatting](#)

Raster Mode Command Samples Include:

[Port Discovery](#)

[Get Status](#)

[Sample Receipt](#)

[JP Sample Receipt](#)

[Open Cash Drawer](#)

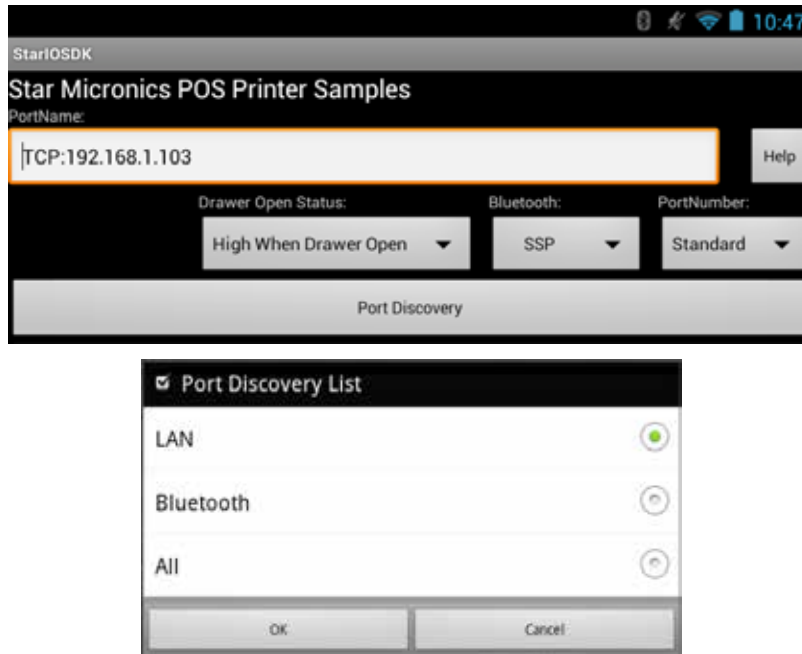
[Raster Graphics Text Printing](#)

[Image File Printing](#)

Note: TSP100 series support only Raster Mode.

Port Discovery

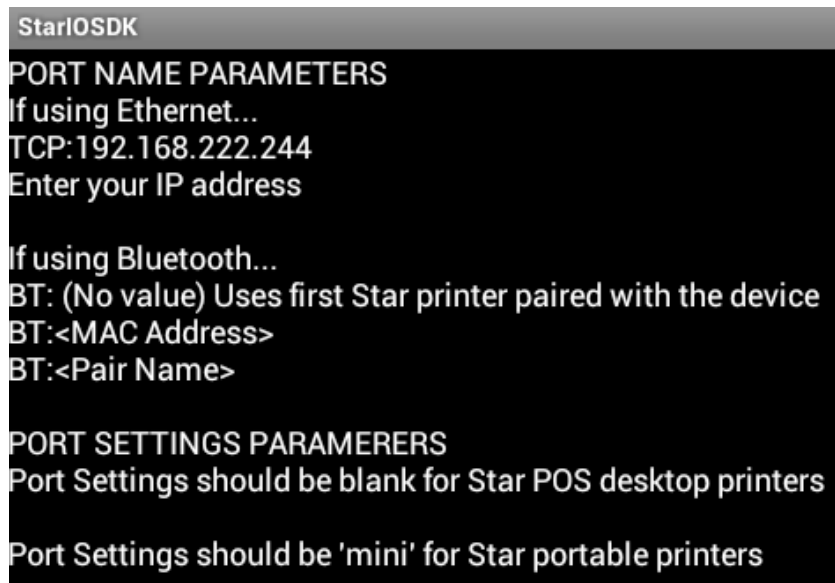
Line Raster



Automatically detects which Star Micronics Printers are connected to the network. Tap the printer to connect to it. [This feature is documented in greater detail here](#). USB printers do not support this feature.

Help

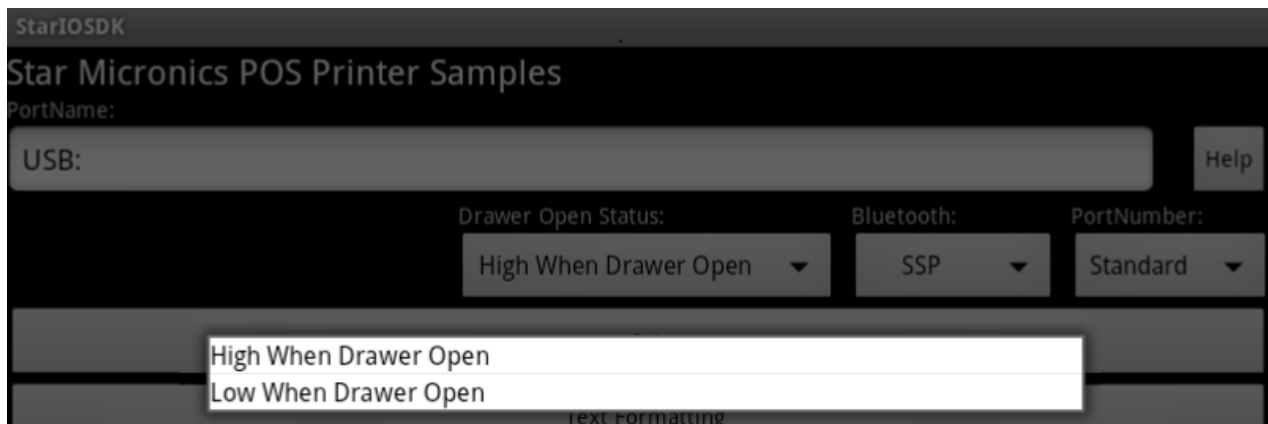
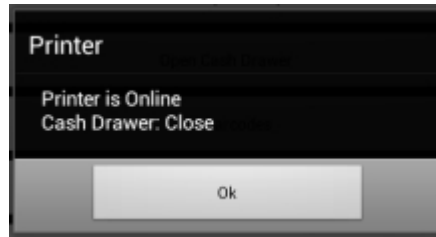
Line Raster



Displays rules for manually entering the printer's port data into the "PortName" field. Manually entering port data is unnecessary if Port Discovery is used.

Get Status

Line Raster



Drawer Open Status

Select the Sensor Active setting according to the specification of a peripheral device to be used.

StarPrinterStatus

public boolean retrieveStatus()

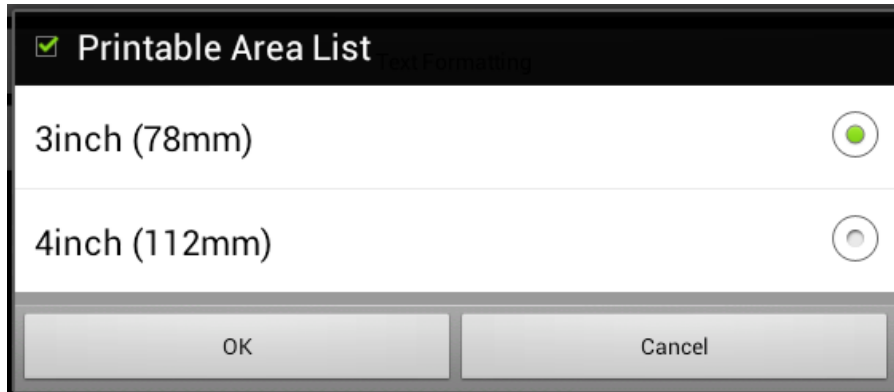
[See status return values here](#)

offline

false = printer online; true = printer offline

other

[See status return values here](#)



Prints a premade sample receipt in the chosen command type. "Sample Receipt" outputs a receipt in English, while "JP Sample Receipt" outputs one in Japanese.

Select the sample's width and tap "OK" to print it. This part of the source code is heavily commented to demonstrate how receipts can be fully customized.

Open Cash Drawer

Line Raster


No additional screen. The printer will open the cash drawer if one is connected.

Drawer Open

BEL

Opens the cash drawer (no value input needed)

StarIOSDK



C O D E 3 9

Barcode Data

|1234567890

Barcode Height (Max 255)

80

Width (Dots)

2:6 ▾

Layout

No under-bar character & execute line feed ▾

Help
Print

Configure 1D Barcode

ESC b n1 n2 n3 n4 d1 ... dk RS

n1 = Barcode Type

0 = UPC-E *	1 = UPC-A *	2 = JAN/EAN8 *	3 = JAN/EAN13 *	
4 = Code39	5 = ITF	6 = Code128	7 = Code93	8 = NW-7 *

n2 = Under-bar character selection and added line feed selection

1 = No added under-bar characters & Executes line feed after printing barcode
 2 = Adds under-bar characters & Executes line feed after printing barcode
 3 = No added under-bar characters & doesn't line feed after printing barcode
 4 = Adds under-bar characters & doesn't line feed after printing barcode

n3 = Specifies the size of the narrow and wide barcode lines


n4 = Barcode height (dot count)

* These barcodes are supported by Star POS Printers, but no example is in the sample application.

Note: 1D Barcode samples are not available for Raster Mode in this application. It is recommended to send barcodes graphically to the printer when using Raster Mode.

QR Code

StarIOSDK



Correction Level

L 7% ▾

QR Code Size by EC Level

Auto Size ▾

Model Size

1 ▾

QR Code Data

http://www.starmicronics.com

Help
Print

Select QR Code

There are 5 commands below that are very important to printing a good QR Code.

- | | |
|----------------------------------|--------------------------------|
| (1) Set QR Code Model # | ESC GS y S 0 n |
| (2) Set QR Code Correction Level | ESC GS y S 1 n |
| (3) Set QR Code Cell Size | ESC GS y S 2 n |
| (4) Set QR Code Data | ESC GS y D 1 NUL nL nH d1...dk |
| (5) Print the QR Code | ESC GS y P |

This is the order in which commands need to be sent to print the QR Code:

QR Model + QR Correction Level + QR Cell Size + QR Data + Print QR Code

Refer to the Line Mode Programming Manual for a listing of all QR Code commands.

Note: 2D Code samples are not available for Raster Mode in this application. It is recommended to send barcodes graphically to the printer when using Raster Mode.

PDF417

StarIO SDK

Barcode Size

Use Limits

height=1 ≤ h ≤ 99 width=1 ≤ w ≤ 99

Aspect Ratio

1

X Direction

1

Security Level

0

Barcode Data

http://www.starmicronics.com

Help Print

Select PDF417

Please visit page 3-120 in the Line Mode Spec Manual for more details on PDF417

- | | |
|--|-------------------------------|
| (1) Set PDF417 barcode size | ESC GS x S 0 n p1 p2 |
| (2) Set PDF417 ECC (Security Level) | ESC GS x S 1 n |
| (3) Set PDF417 module X direction size | ESC GS x S 2 n |
| (4) Set PDF417 module aspect ratio | ESC GS x S 3 n |
| (5) Set PDF417 barcode data | ESC GS x D nL nH d1 d2 ... dk |
| (6) Print PDF417 barcode | ESC GS x P |

This is the order in which commands need to be sent to print the PDF417 barcode:

PDF417 Size + PDF417 ECC + PDF417 X-dim + PDF417 Ratio + PDF417 Data + Print PDF417

Refer to the Line Mode Programming Manual for a listing of all PDF417 commands.

Note: 2D Code samples are not available for Raster Mode in this application. It is recommended to send barcodes graphically to the printer when using Raster Mode.



Full Cut

ESC d 0 Full Cut at Current Position

Partial Cut

ESC d 1 Partial Cut at Current Position

Full Cut with Feed

ESC d 2 Feed and then Full Cut Position

Partial Cut with Feed

ESC d 3 Feed and then Partial Cut

Note: Cut samples are not available for Raster Mode in this application. Please refer to the Star Micronics Line Mode Programming Manual for Raster Mode cut commands.

Text Formatting

Line

StarIOSDK

Slashed Zero

Underline

Invert Color

Emphasized

Upperline

Upside Down

Height Expansion

1

Width Expansion

1

Left Margin (Max 255)

Alignment

Left

Text To Print

This feature sends raw text with decoration as defined above to the printer.

Help Print

Text Formatting (continued from above)

Slashed Zero	ESC / 1 = on	ESC / 0 = off
Underline	ESC - 1 = on	ESC - 0 = off
Invert Color (B/W)	ESC 4 = on	ESC 5 = off
Emphasized (Bold)	ESC E = on	ESC F = off
Upperline	ESC _ 1 = on	ESC _ 0 = off
Upside-Down	SI = on	DC2 = off
Character Expansion		
Height	ESC W n	$0 \leq n1 \leq 5$
Width	ESC h n	$0 \leq n2 \leq 5$
Set Left Margin		
ESC l n	$0 \leq n \leq 255$	
Alignment		
Left	ESC GS a 0	
Center	ESC GS a 1	
Right	ESC GS a 2	

Note: Raster Mode receives graphical data only so this sample is not compatible. For a data formatting example in this mode, refer to [Raster Graphical Text Printing](#).

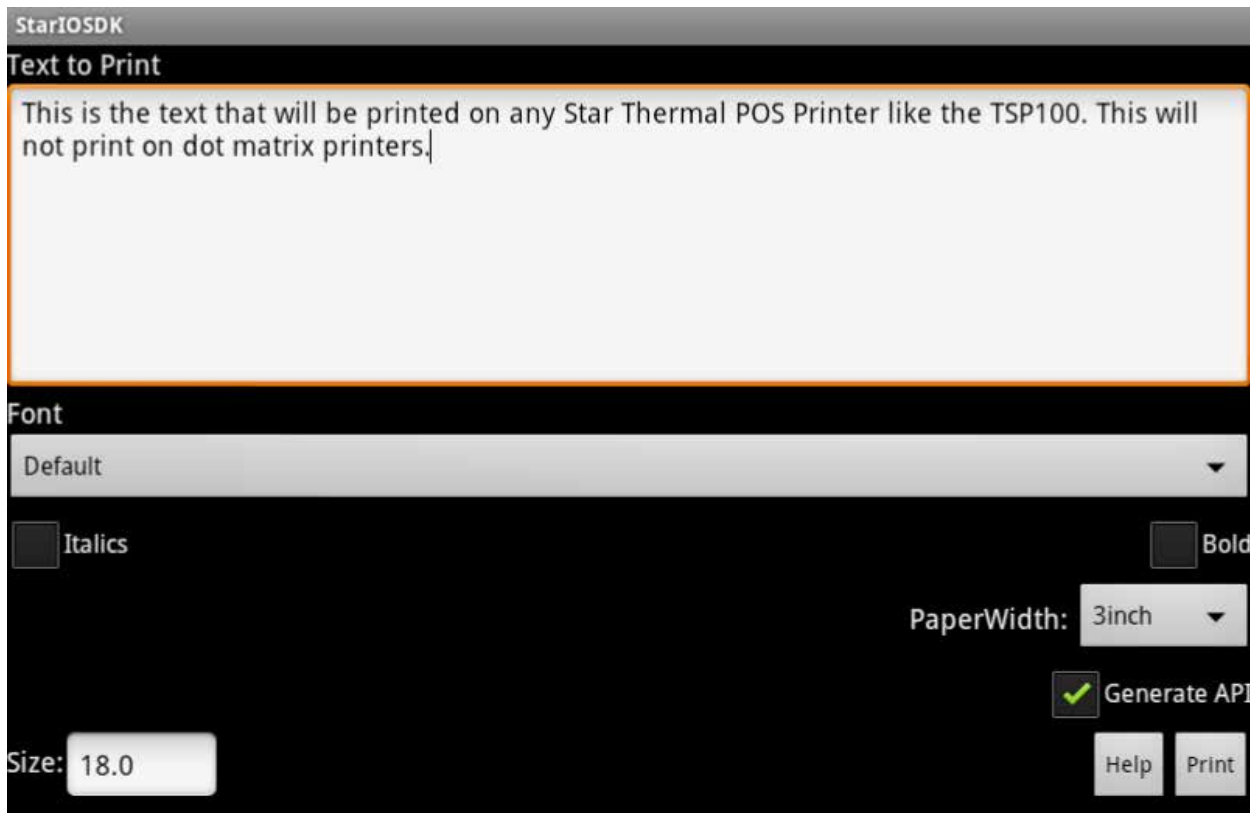


This functionality is exactly the same as that of Text Formatting, except Japanese Kanji is supported. As shown above, it is easy to switch between Shift-JIS and JIS.

Japanese Kanji Text Formatting (continued from above)

Enable JIS Mode	ESC p	
Cancel JIS Mode	ESC q	
Enable Shift JIS Mode	ESC \$ 1	
Cancel Shift JIS Mode	ESC \$ 0	
Slashed Zero	ESC / 1 = on	ESC / 0 = off
Underline	ESC - 1 = on	ESC - 0 = off
Invert Color (B/W)	ESC 4 = on	ESC 5 = off
Emphasized (Bold)	ESC E = on	ESC F = off
Upperline	ESC _ 1 = on	ESC _ 0 = off
Upside-Down	SI = on	DC2 = off
Character Expansion		
Height	ESC W n	$0 \leq n1 \leq 5$
Width	ESC h n	$0 \leq n2 \leq 5$
Set Left Margin		
ESC l n		$0 \leq n \leq 255$
Alignment		
Left	ESC GS a 0	
Center	ESC GS a 1	
Right	ESC GS a 2	

Note: Raster Mode receives graphical data only so this sample is not compatible. For a data formatting example in this mode, refer to [Raster Graphical Text Printing](#).



Raster Mode converts all print data into image data and then outputs it to the printer. This enables Star Printers to print at high speeds, regardless of outputting receipts with only text or text and logos/coupons. As there are many options on how to customize output in Raster Mode, refer to the Line Mode Programming Manual for a listing of all Raster commands. These commands are also conveniently listed right on the Android device by tapping the Help button on the screen.

Using "generate API" method may improve through put.

Note1: Line Mode cannot process graphical data so this sample is not compatible. For a data formatting example in this mode, refer to [Text Formatting](#).

Note2: If send large amounts of raster data command, use beginCheckedBlock / endCheckBlock method "before / after" sending data by writePort method for preventing "data detective".

Detail refer to the "**printBitmap**" method in the "**PrinterFunctions.java**".



Use the dropdown box to select one of four different sample images to print via Raster Graphics. Note: The images in this sample are pre-formatted for 80mm wide receipts. If the printer in use is smaller or wider than 80mm, the image will not be automatically scaled.

Raster Mode converts all print data into image data and then outputs it to the printer. This enables Star Printers to print at high speeds, regardless of outputting receipts with only text or text and logos/coupons. As there are many options on how to customize output in Raster Mode, refer to the Line Mode Programming Manual for a listing of all Raster commands. These commands are also conveniently listed right on the Android device by tapping the Help button on the screen.

Using "generate API" method may improve throughput.

Note: This sample is not available in Line Mode.

Tips for App Development when using StarIO

Star Micronics prides itself as the industry leader in great POS products and with great power comes great responsibility. Below is a tips section just to help you get on the fast track to software development with StarIO.

TIP #1: If you are going to be coding a large project, create a class to abstract all the printing methods into class(s) instead of having the code reside in the main code block. This will help with code reusability and will also save you time in the long run from having to find one line of code in the main code. By having StarIO only reside in the class(s), you will be fully taking advantage of object oriented programming.

TIP #2: Know what the differences and definitions of (ASCII & Unicode), (Hex & Decimal), and (Byte & Char) are. A byte is normally 8-bits long which would be 8 digits of binary (1s and 0s). These bytes are just 8 bits of binary data but bytes can also be int or char. The three different variable types basically hold the data in the same way but there are slight differences. Try to code with Bytes instead of Chars, ints, or strings when choosing a variable to contain your print job data. ASCII to Unicode and vice versa conversions are sometimes unsecure so make sure you know what and how the encoding class works with these. Big mistakes made in Unicode are culture-sensitive search and casing, surrogate pairs, combining characters, and normalization.

TIP #3: HEX DUMP MODE! If you are debugging and your application seems to have a bug in it use hex dump mode on the printer. This is the best way to verify what is being sent out of the computer is being received correctly. To put the printer in hex dump mode, turn the printer off, open the cover to the paper, hold the feed button down, turn the printer back on, close the cover, let go of the feed button. Hex dump mode is a sure fire way to verify hex data is sent correctly. When in hex dump mode, printer functions will not work.

TIP #4: Do not waste time trying to reverse engineer StarIO command codes. All the available StarIO commands are available in the Thermal Line Mode Spec Manual and that is the best resource to use when researching a specific StarIO command. This SDK & Manual was built to help you (The Developer) have a very easy job ahead of you to program for Star Printers.

TIP #5: If there is a command that is not covered in this SDK but you wish to see a code snippet of that command in use then visit our Developers section for a possible code block that matches your needs.

TIP #6: Looking for an iOS printing SDK? Visit our [Developers section](#) to get access to Star developer tools for these environments.

Additional Resources

This section will share resources that will help you develop good software with StarIO.

Please get the programmers manual for Star Portable Printers from the link below.

[Star Micronics Developers Network](#)

Browse Star Micronics' FAQs, ask a question, look up information, etc.

The Developers Network gets you access to:

- § Updated Versions of this Manual and Source Code
- § Getting Started Advice and Industry Information
- § Star Micronics Printer Drivers
- § Technical Questions/Support

[Android Developers Resource](#)

The official Android development resource.

[System Requirements for Android Development](#)

See requirements for Windows, Linux, and Mac.

[Unicode.org](#)

The Unicode Consortium - Good place to learn more about Unicode.

[1D Barcodes](#)

Barcode Island is a great resource for specs on 1D barcodes.

[2D Barcodes](#)

Great place for information on 2D Barcodes, [QR Codes](#), and [PDF417](#)

[Code Pages](#)

Learn about Code Pages here.

ASCII Table Resource

ASCII Hex Symbol	ASCII Hex Symbol	ASCII Hex Symbol	ASCII Hex Symbol
0 0 NUL	16 10 DLE	32 20 (space)	48 30 0
1 1 SOH	17 11 DC1	33 21 !	49 31 1
2 2 STX	18 12 DC2	34 22 "	50 32 2
3 3 ETX	19 13 DC3	35 23 #	51 33 3
4 4 EOT	20 14 DC4	36 24 \$	52 34 4
5 5 ENQ	21 15 NAK	37 25 %	53 35 5
6 6 ACK	22 16 SYN	38 26 &	54 36 6
7 7 BEL	23 17 ETB	39 27 '	55 37 7
8 8 BS	24 18 CAN	40 28 (56 38 8
9 9 TAB	25 19 EM	41 29)	57 39 9
10 A LF	26 1A SUB	42 2A *	58 3A :
11 B VT	27 1B ESC	43 2B +	59 3B ;
12 C FF	28 1C FS	44 2C ,	60 3C <
13 D CR	29 1D GS	45 2D -	61 3D =
14 E SO	30 1E RS	46 2E .	62 3E >
15 F SI	31 1F US	47 2F /	63 3F ?
ASCII Hex Symbol	ASCII Hex Symbol	ASCII Hex Symbol	ASCII Hex Symbol
64 40 @	80 50 P	96 60 `	112 70 p
65 41 A	81 51 Q	97 61 a	113 71 q
66 42 B	82 52 R	98 62 b	114 72 r
67 43 C	83 53 S	99 63 c	115 73 s
68 44 D	84 54 T	100 64 d	116 74 t
69 45 E	85 55 U	101 65 e	117 75 u
70 46 F	86 56 V	102 66 f	118 76 v
71 47 G	87 57 W	103 67 g	119 77 w
72 48 H	88 58 X	104 68 h	120 78 x
73 49 I	89 59 Y	105 69 i	121 79 y
74 4A J	90 5A Z	106 6A j	122 7A z
75 4B K	91 5B [107 6B k	123 7B {
76 4C L	92 5C \	108 6C l	124 7C
77 4D M	93 5D]	109 6D m	125 7D }
78 4E N	94 5E ^	110 6E n	126 7E ~
79 4F O	95 5F _	111 6F o	127 7F □

Use this to compare hex values to symbol (ASCII) values.

SDK Package Version History

Release Date	SDK Package Version	Update
Jul. 3 2013	3.7.0	- Added Star Printer Status List
May 29 2013	3.6.0	- Updated Port Discovery, USB setting, printer status - Added CashDrawer sensor setting
Dec. 28 2012	3.3.0	- Added Bluetooth Interface, TSP650II - Added Begin / End Check Block support - Updated Raster Graphic Text Printing
Nov. 2012	3.2.0	- Revised version of the Portable Printer
Jul. 27 2012	3.1.0	- Changed SDK UI to tree structure - Added Port Discovery support - Added Apple AirPort Express support - Added Sample Receipt Printing support
May 31 2012	2.4.0	- Updated default StarIO Port Class name - Revised default order of StarIOPort JAR to support Android SDK r17 and higher
Mar 15 2012	2.3.0 Beta	- Added USB Printing Support (POS Printers Only)
Jan. 18 2012	2.2.0 Beta	- Added Raster Image Printing Sample
Jan. 12 2012	2.1.0	- Added Japanese Text Formatting Sample - Added Japanese Manuals
Oct. 14 2011	2.0.0	- Updated Sample Printing
Jun. 03 2011	1.0.0	- Initial Release



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