USB TO RS-232/RS-422/RS-485 ADAPTER

For Android

User's Manual

UTS-232AD / UTS-422AD / UTS-485AD

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Introduction

The USB to serial adapter enables you to connect a RS-232, RS-422, or RS-485 device to a smart phone or tablet with Android OS.
Designed for mobility and integration into mixed environments such as Controlling instrumentation, Home automation, barcode scanning etc.; this portable and lightweight single cable solution is compatible with nearly all Android OS version 3.2 Honeycomb or later devices including the Samsung Galaxy Note®, Galaxy® S5, S4, S3, or S2, Google Nexus 7™, 5, or 4, and Motorola or HTC mobile devices.
Exception: serial mouse, or serial modem is not for application.

System Requirements

- Android OS Version 3.2 Honeycomb or later

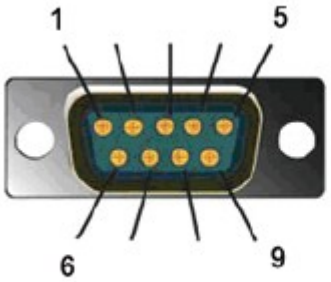
Features

- Fully Compliant with USB Specification 1.1 and 2.0
- USB to Straight-Through RS-232/RS-422/RS-485 DB9 Serial Adapter for Android.
- Supports data transfer rate up to 230 kbps (RS-232), 921 kbps (RS-422/RS-485); or up to 115kbps with no flow control.
- Standard UART interface (RX, TX, RTS, CTS and GND pins)
- UART TX buffer size is 256 bytes, UART RX buffer size is 5512 bytes.
- Supports ±15kV HBM ESD protection
- Supports OTG (On-The-Go) mode but no external OTG cable is required.
- Powers and charges the connected Android device, USB-powered via PC USB port, USB wall charger, or USB mobile battery pack.
- Compatible with Android OS Version 3.2 Honeycomb or later. (Suitable for use on any Android platform supporting Android open Accessory Mode)

Specifications

Model No.		UTS-232AD	UTS-422AD	UTS-485AD
Chipset		FTDI		
USB Specification		USB 1.1/2.0 compliant		
Data Transfer Rates	USB	1.5 / 12 Mbps		
	Serial	230 kbps	921 kbps	
Connector	Upstream	USB Type A Male X 1; USB Micro-B Male X 1		
	Device	DB-9/M		
LED		3		
Power Mode		Bus or External Powered		
Cable Length	USB Micro B/M	1.1m		
	USB A/M	0.3m		
Housing		Plastic		

RS-232/RS-422/RS-485 Pin Assignment

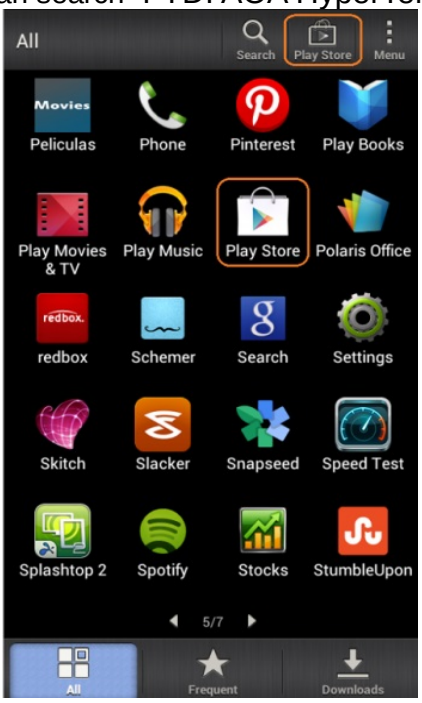


DB-9

	UTS-232AD	UTS-422AD	UTS-485AD
Pin No.	Definition		
1		TX-	D-
2	RX	TX+	D+
3	TX	RX+	
4		RX-	
5	GND	GND	GND
6		RTS-	
7	RTS	RTS+	
8	CTS	CTS+	
9		CTS-	

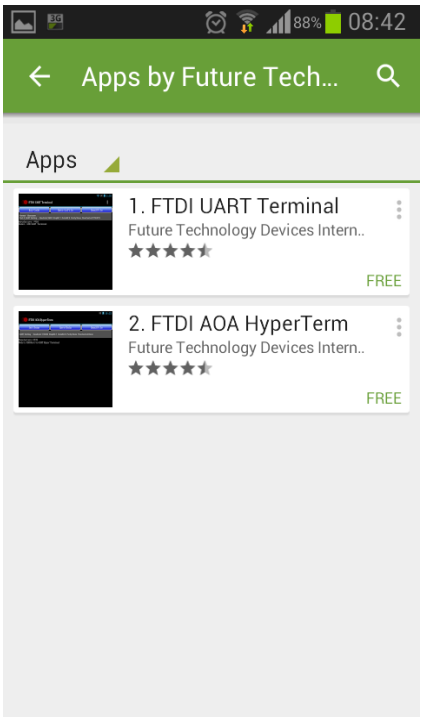
Install Application

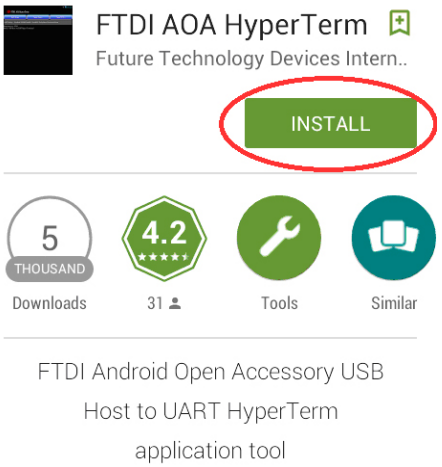
Find the application in play store by searching “ftdi aoa” and then install it. On the following screen, clicks the “Google Play™” icon. This will take you to the Google Play Store to download the Android application. Alternatively, you can search “FTDI AOA HyperTerm” from the Google Play Store.



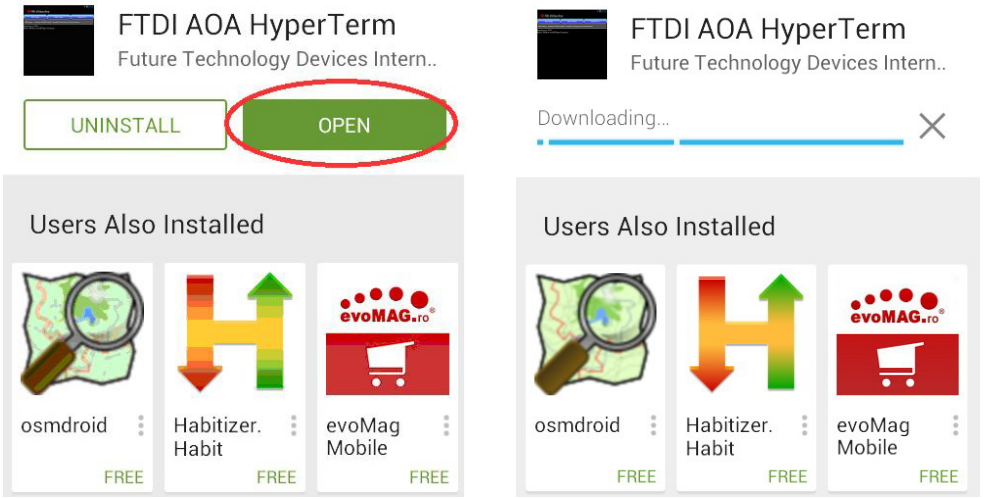
**Google Play is a trademark of Google Inc.*

Select the “FTDI AOA HyperTerm” application, on next screen select “INSTALL.”





The application will download and install automatically, and auto loads once you connect the adapter to your Android device. Congratulation! You have finished installing the “FTDI AOA HyperTerm” application successfully.



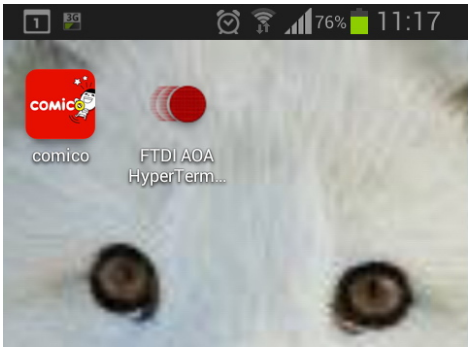
Connect your Serial device to the DB9 connector of the adapter. Connect the USB A connector to the USB port of a computer, or to a 5V/1A USB wall charger. Connect the USB Micro-B connector to the Micro USB port on your mobile Android™ device.

Note: This device will only work on the original infrastructure of the Android operating system and may not function with any modified versions.

It is recommended to use the default “FTDI” application for serial control. Alternatively, you may scan the QRcode of the package provided that will lead you to download the “FTDI AOA HyperTerm” application.

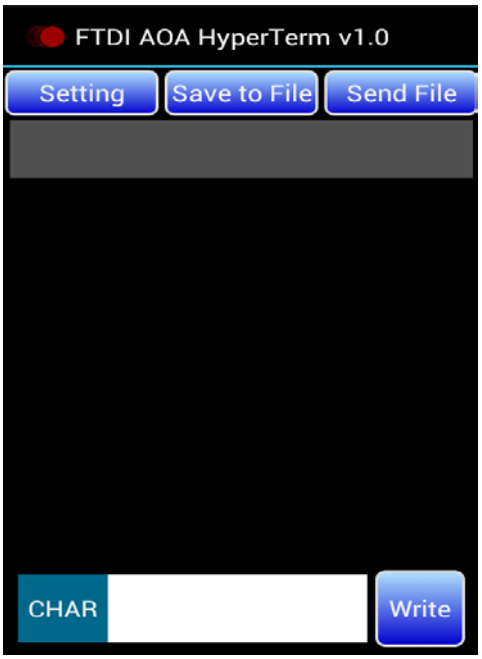
Operation

The application will launch once the USB to Serial adapter is connected to your Android device. You should also see a “FTDI AOA HyperTerm v1.0” icon within your applications lists, or on one of your home screens.



1. Select “Setting” to configure attributes such as Baud Rate, Stop (bit), Data (bit), Parity, and Flow Control.
2. Select “Send File” to send/receive files between your Android and serial device.
3. Or, type your desired command(s) in the “CHAR” input field and tap the “Write” button to send data when the data format button shows “CHAR”.

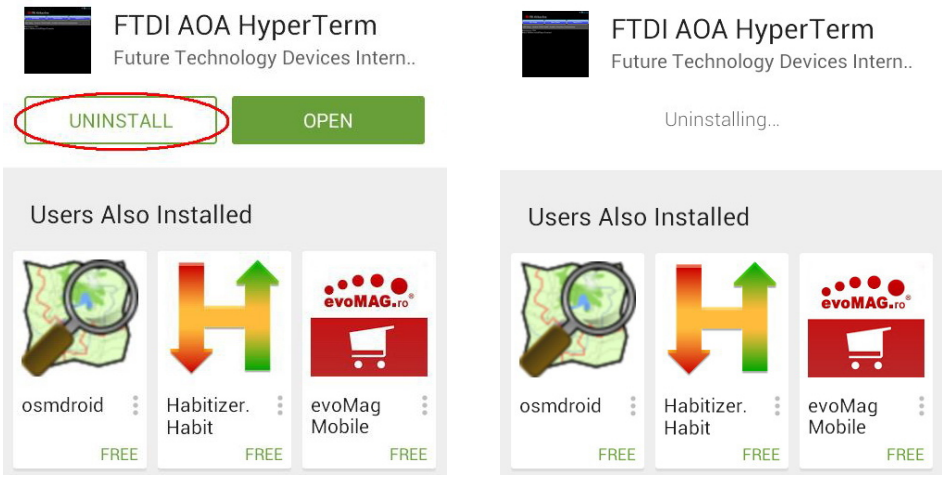
Note: Tapping the data format “CHAR” button toggles HEX format for sending hexadecimal data command(s). When inputting two hexadecimal characters, each character should be from “0” to “9” or from “a” to “f”, otherwise the application will show a warning message when the “Write” button is tapped.



Uninstall Application

You have 2 selections to uninstall the “FTDI AOA HyperTerm” application:

- You can search “FTDI AOA HyperTerm” from the Google Play Store →click “UNINSTALL”
- Uninstall the “FTDI AOA HyperTerm” application thru the Uninstaller applications.



1. Launch and Exit Application

When your android device is attached with the Serial adapter, it will ask you to execute this application.

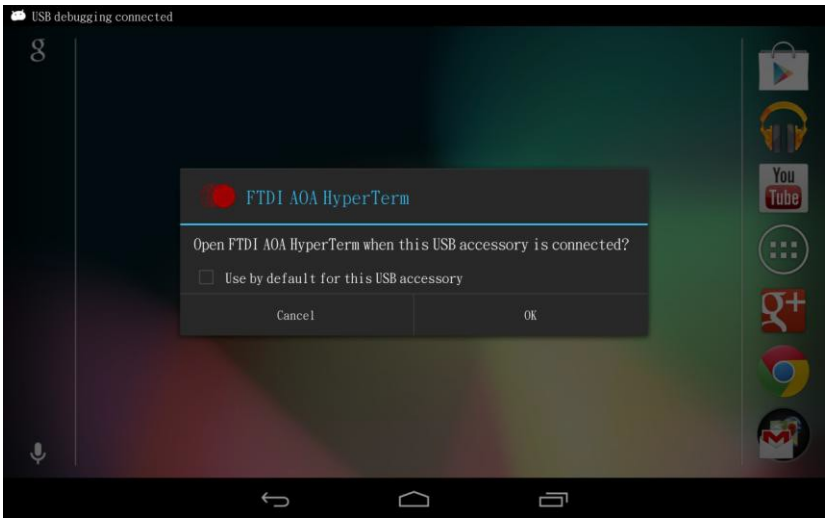


Figure 1 Launch Application

To exit this application, you should tap the back button and it will show a notification message. Then tap the back button again to exit before the notification message disappears.

Note that you have to reset or re-plug the Serial adapter if you want to use it again.

2. Functions

This section describes how to use this utility.

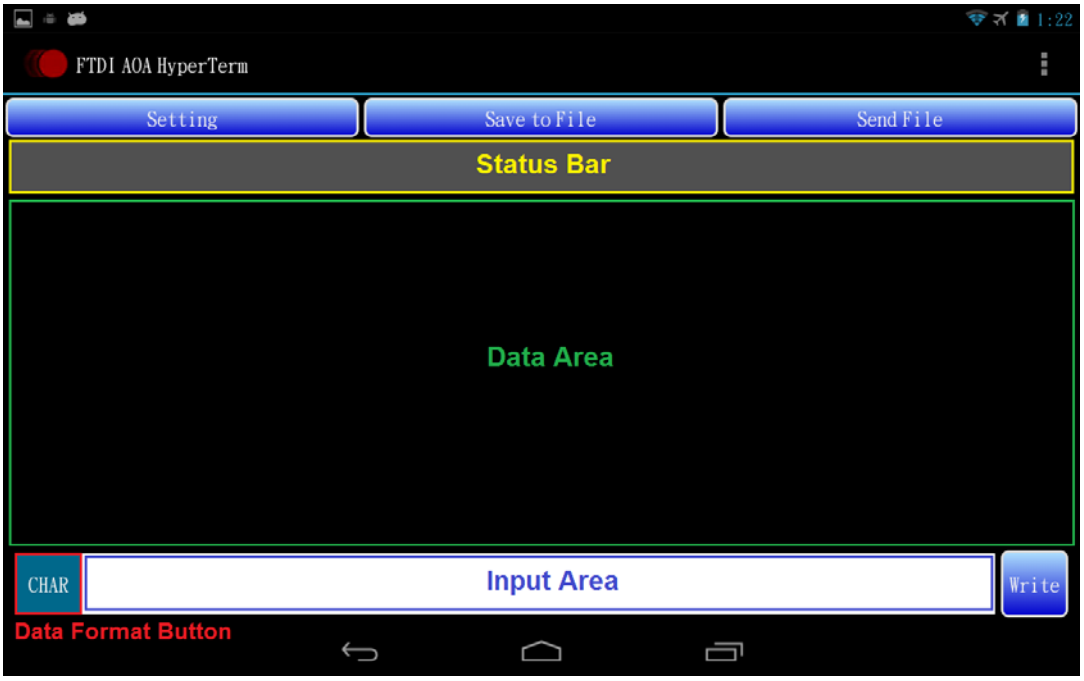


Figure 2 Main Screen

3. Serial Settings

Tap the “Setting” button and it shows a row with several setting items for serial settings.

Figure 3 Serial Settings

The configuration settings allow the baud rate to be set at standard values between 300 and 921600 baud with CTS/RTS flow control; and the values between 300 and 115200 baud without flow control.

Stop bits may be set for 1 or 2; Data bits may be set for 7 or 8

Parity may be set for None, ODD, EVEN, Mark or Space.

Flow allows for no flow control or RTS/CTS flow control. It will show a warning message when “none” flow control is selected.

After you select the required setting for each item, tap the “Configure” button to set it. “Setting” button becomes “Key Code” button and setting information will be shown on status bar: content format and UART setting.

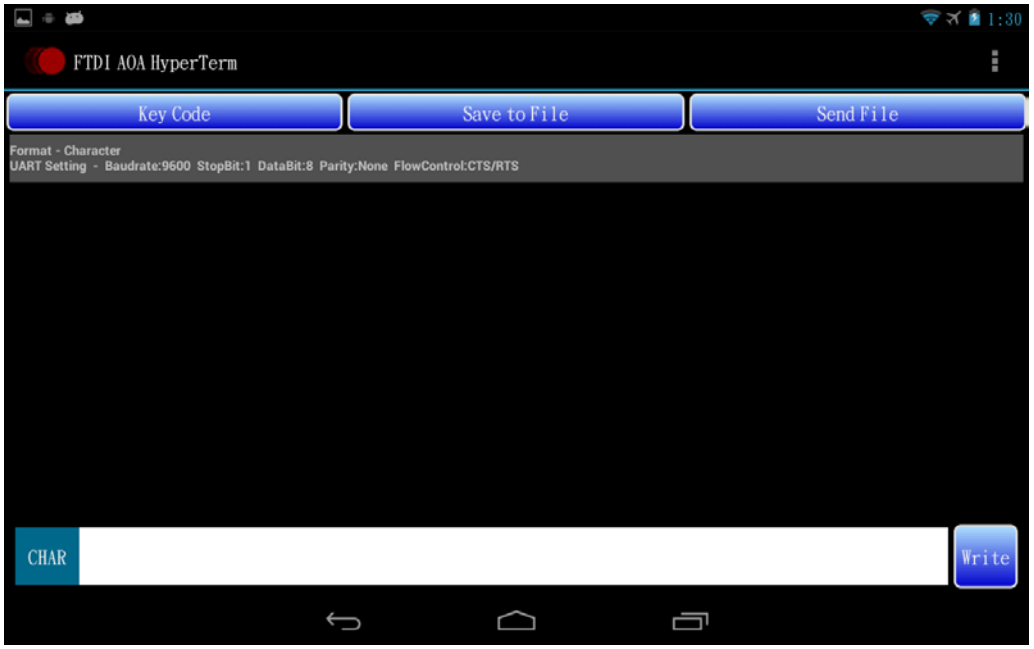


Figure 4 Information on Status Bar

Note you can only do this once. To change settings, the accessory has to be unplugged from the Android system and then re-inserted.

3.1 Send Data

The sent data is also shown in the data area when the content format is character, otherwise it will show a warning message three times when you tap the “Write” button. You may also tap the button of data format to toggle CHAR or HEX format for sending data.

3.1.1 Send Plain Text Data

Input data in the input area and tap “Write” button to send data when the button of data format shows “CHAR”.

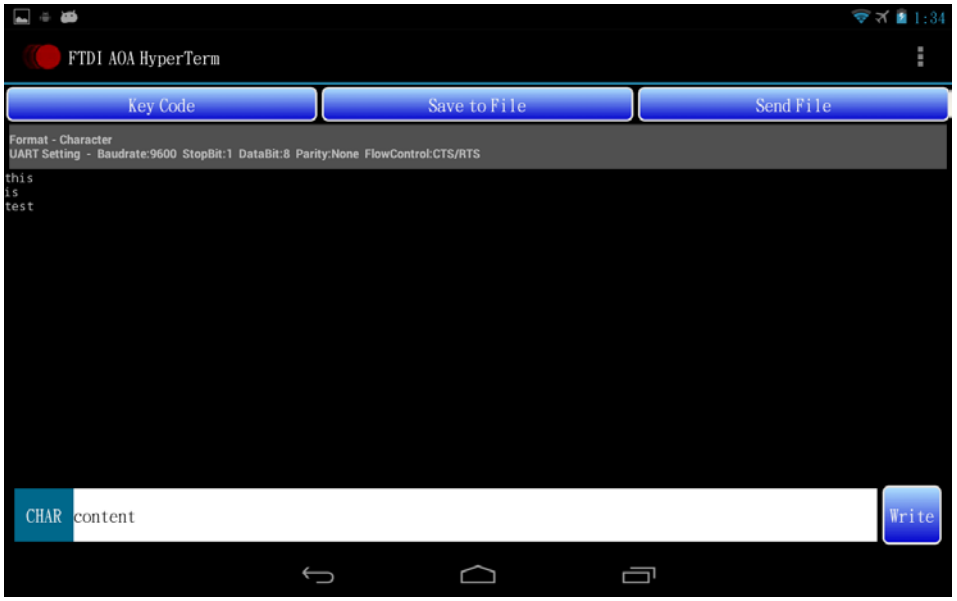


Figure 6 Send Plain Text Data

3.1.2 Send Hexadecimal Format Data

Input data in the input area and tap the “Write” button to send data when the button of data format shows “HEX”.

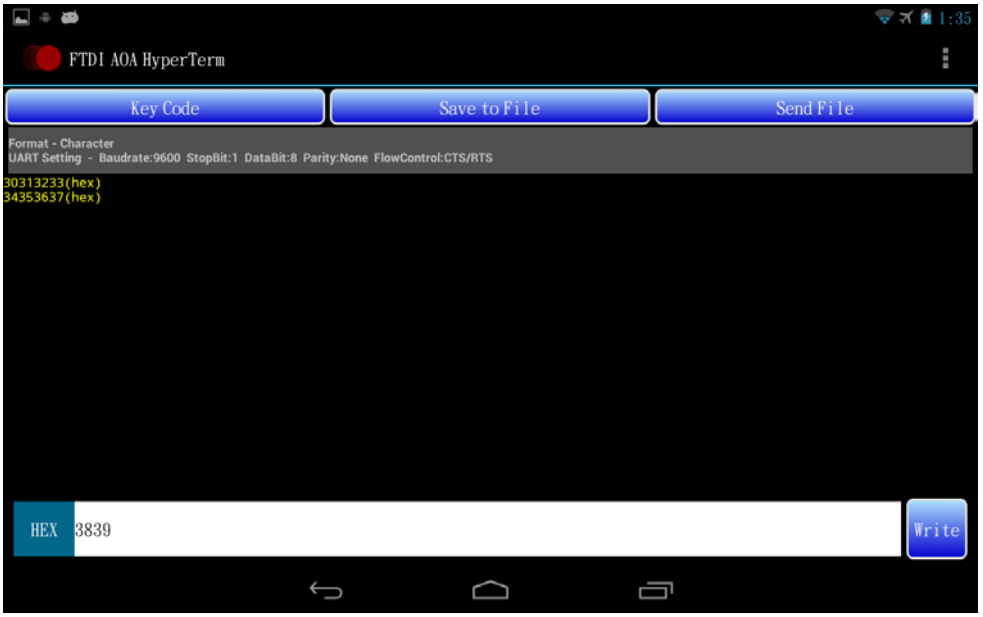


Figure 7 Send Hexadecimal Format Data

Note you need to input 2 characters for hexadecimal data and both characters should be from ‘0’ to ‘9’ or from ‘a’ to ‘f’, otherwise the application will show a warning message when you tap the “Write” button.

3.1.3 Send Special Key Code Data

Tap “Key Code” button and it will show a row with two buttons: Ctrl-C and ESC. Tap

“Ctrl-C” or “ESC” button to send its corresponding key code data.

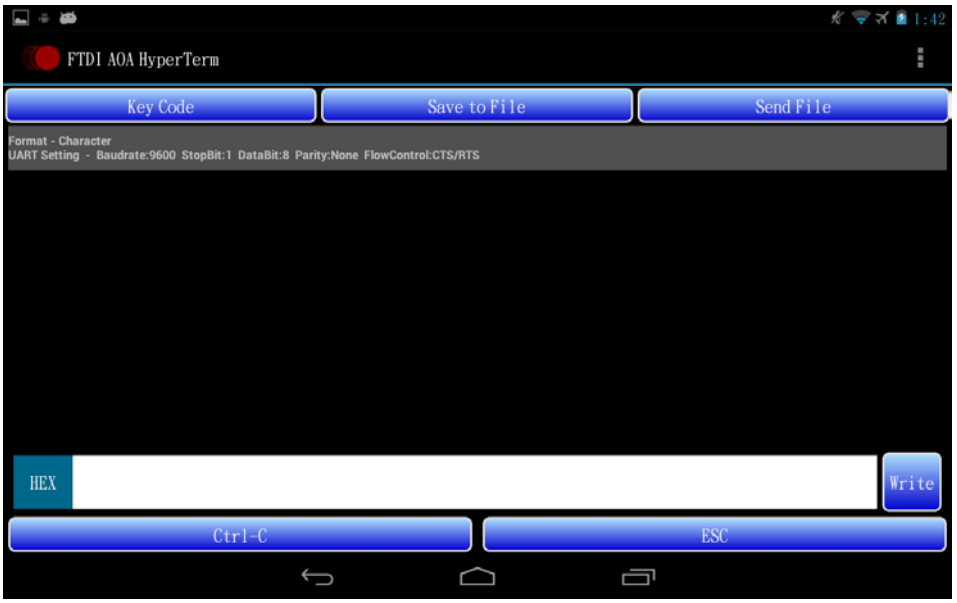


Figure 8 Send Special Key Code Data

3.2 File Transfer

File transfer functions are allowed after the UART is configured and when content format is set to character format, otherwise it will show a warning message when you tap the “Save to File” button or “Send File” button.

3.2.1 Receive File

Step 1: Tap “Save to File” button to prepare receiving file.

Step 2: Select protocol.

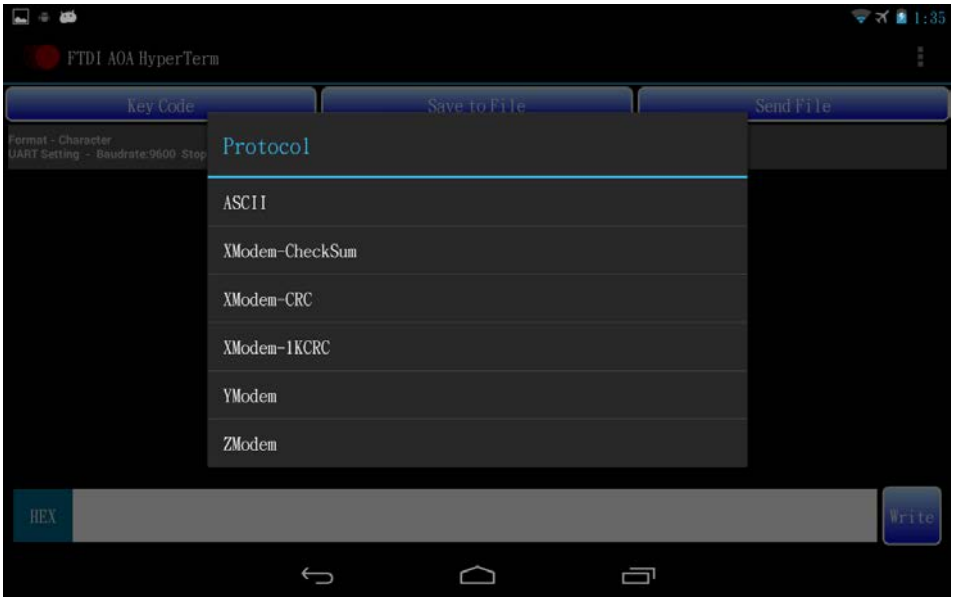


Figure 9 Select Protocol

Step 3: Select file destination.

I. For “ASCII”, ”XModem-CheckSum”, ”XModem-CRC” and “XModem-1KCRC” protocol, you could create a new file or select an exist file for saving.

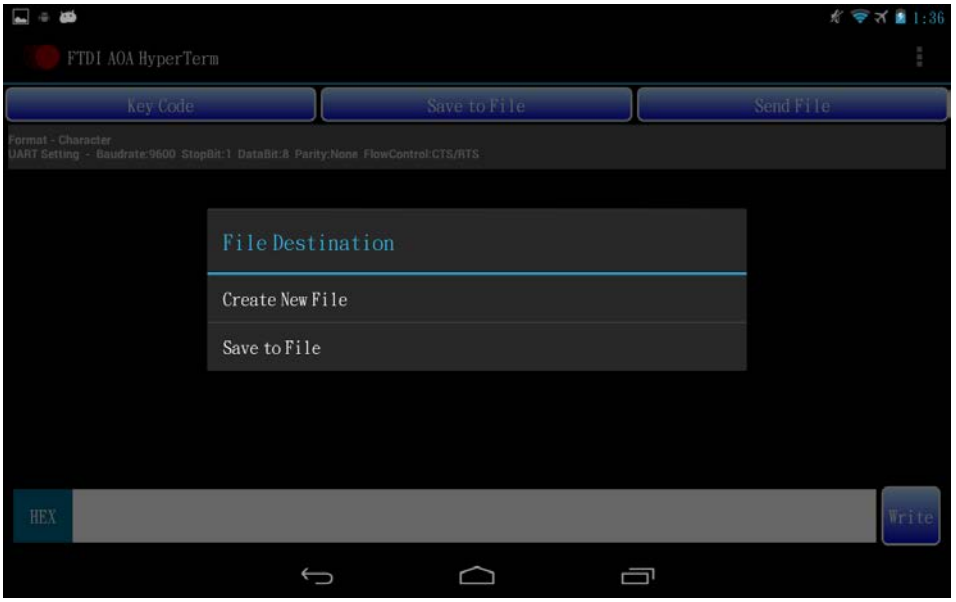


Figure 10 Select File Destination

(1) Create New File
Tap "Select Directory" to select a directory for new file when it is in the folder you want.

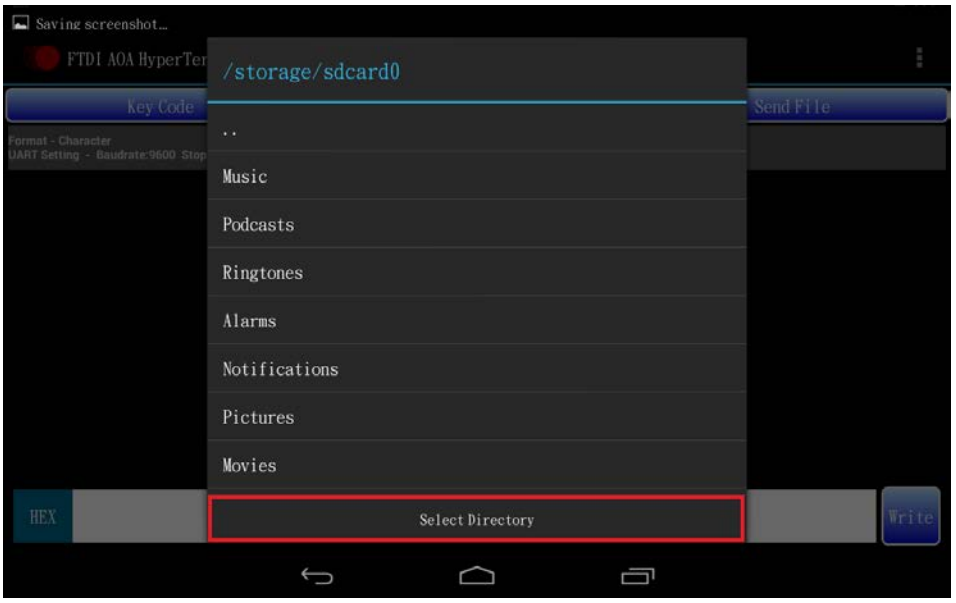


Figure 11 Select Directory

Then input file name and tap “OK” to create a new file.

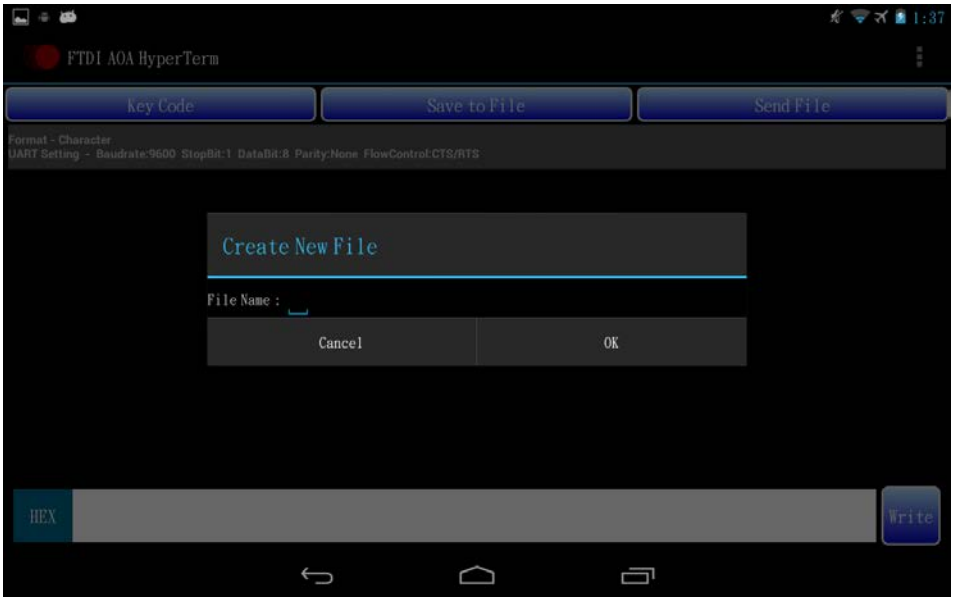


Figure 12Create New File

(2) Save to File
Select an exist file.

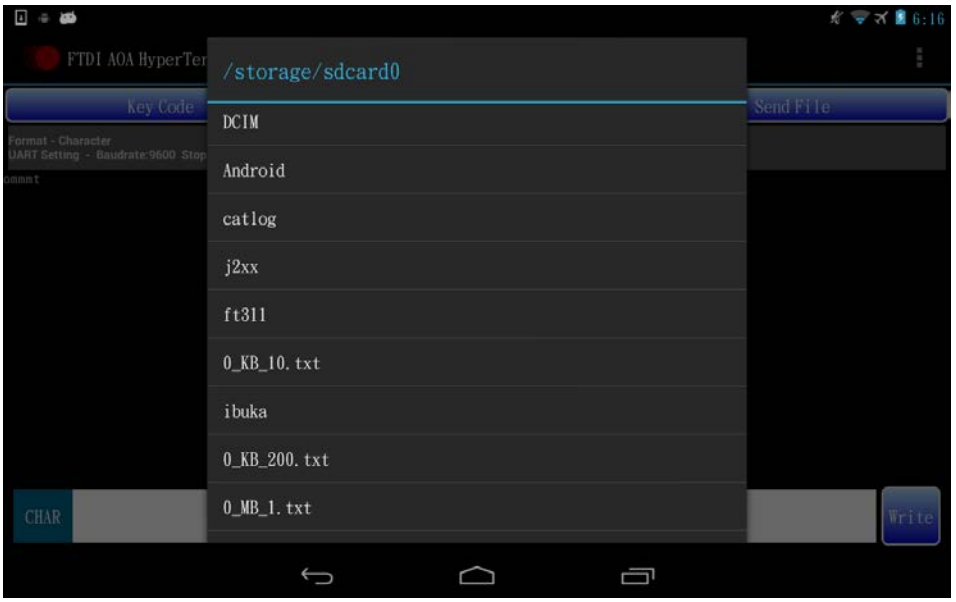


Figure 13 Select a File

II. For “YModem” and “ZModem” protocol, you need to select a folder for file saving. The file name will be created automatically depending on the content information.

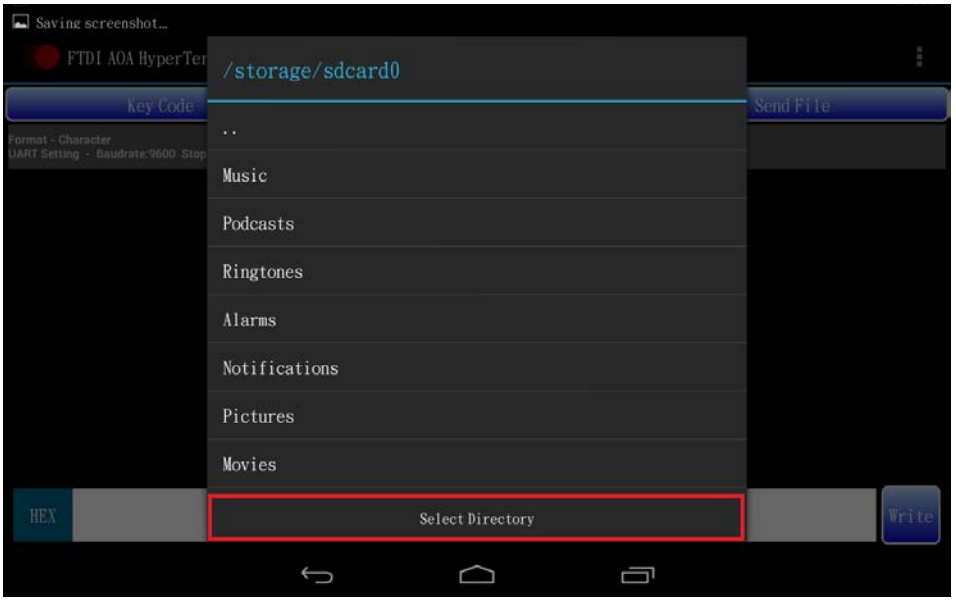


Figure 14 Select Directory

Status bar will show the name of saving file and the saving progress.

3.2.2 Send File

Step 1: Tap “Send File” button to sending file.

Step 2: Select protocol.

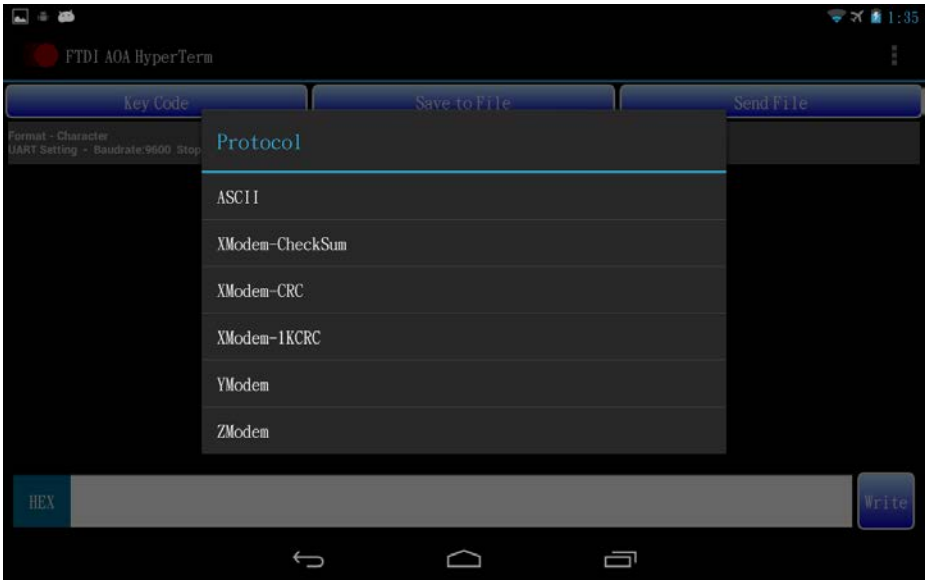


Figure 15 Select Protocol

Step 3: Select a file.

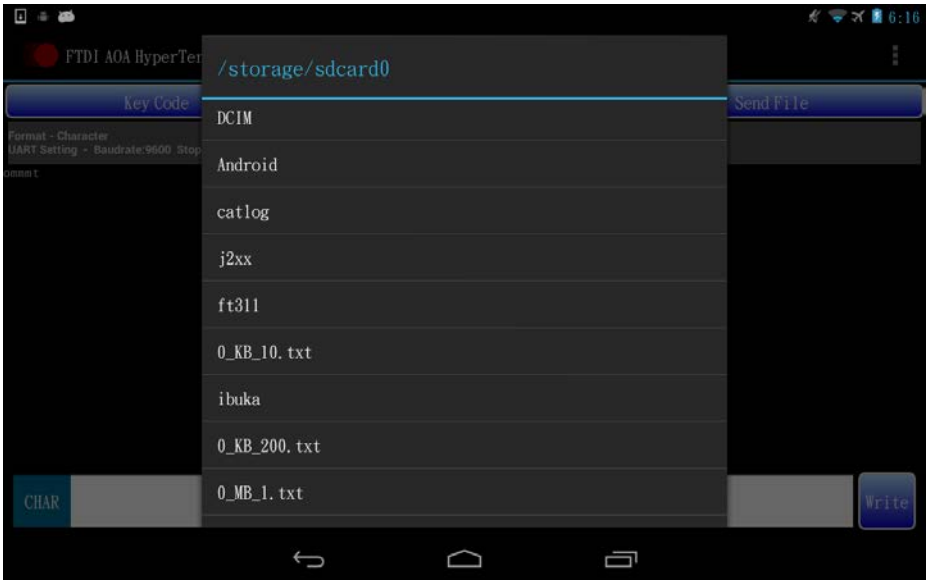


Figure 16 Select a File

Status bar will show the name of sending file and the sending progress.

Note:

1. When the file list is not updated, tap ".." to go to its parent folder and enter this folder again, and the file list will be refreshed.

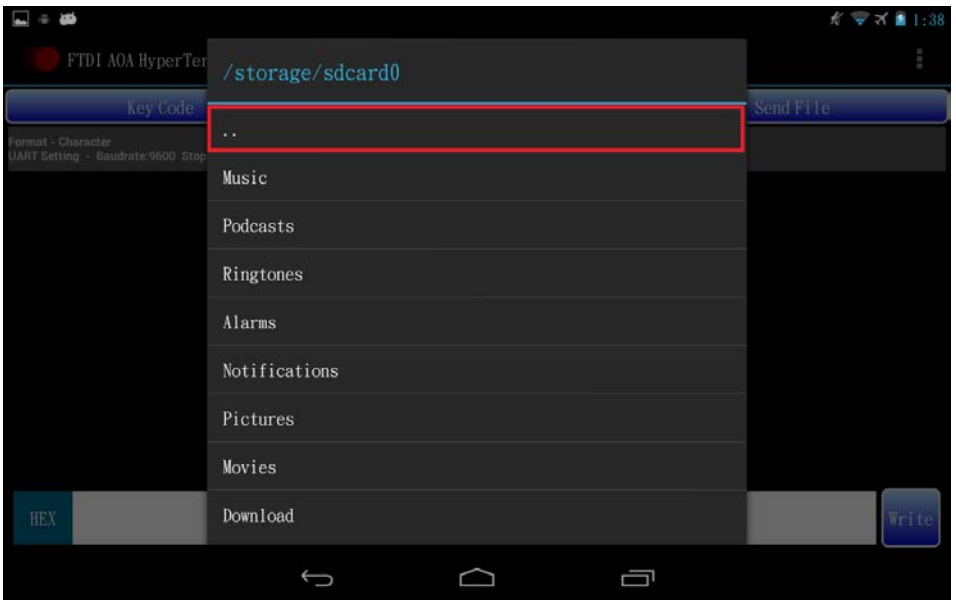


Figure 17 Refresh File List

2. ZModem protocol of FTDI AOA HyperTerm is a simple file transfer protocol. It is implemented and verified with Microsoft XP hyper terminal and Moxa PComm terminal.

3.3 Menu Functions

For tablet devices, tap the menu icon to launch menu:

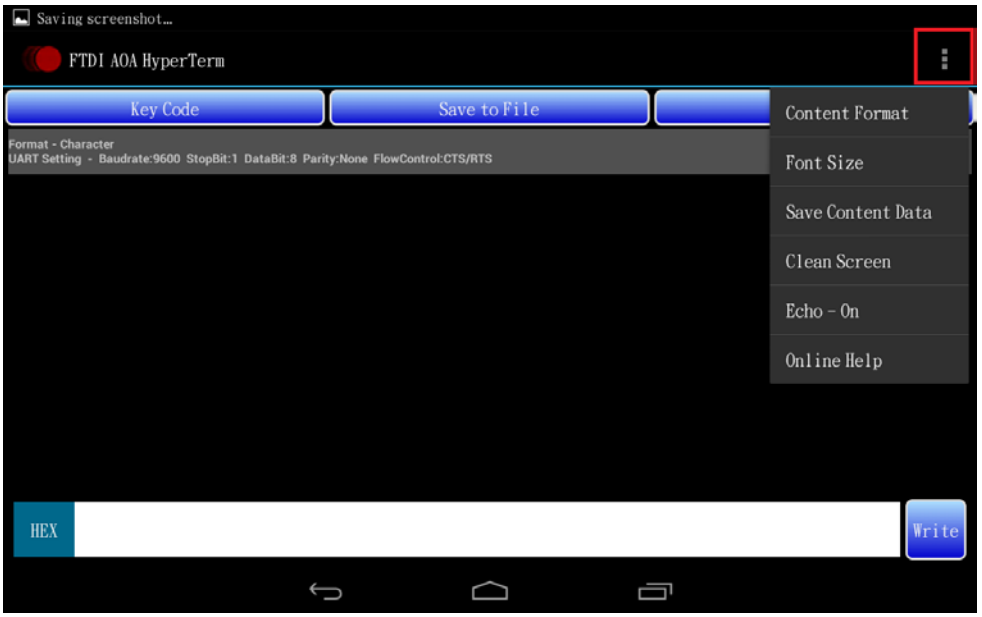


Figure 18 Menu Icon on Tablet Device

For phone devices, press menu key to launch menu.

3.3.1 Content Format

Select the data format of the content showed in data area. The default of content format is character.

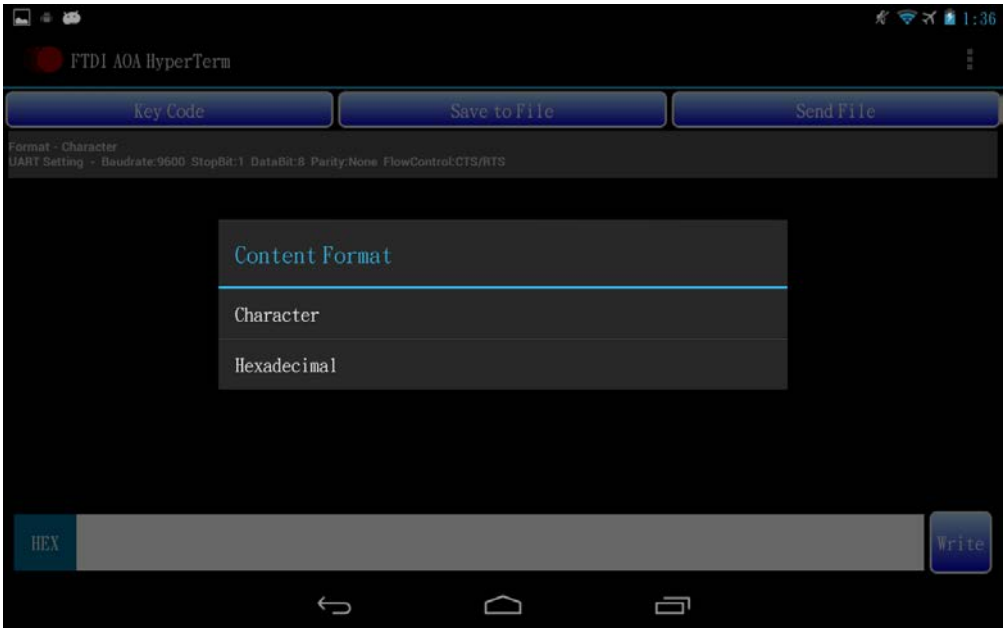


Figure 19 Select Content Format

I. Character

Here is the example data shown in character format.

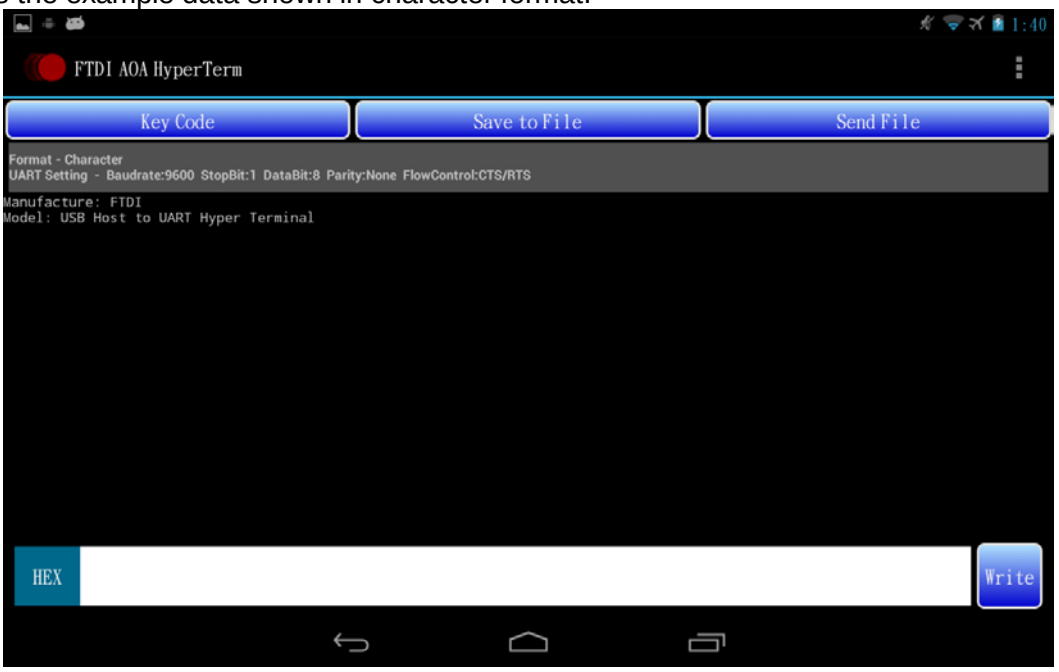


Figure 20 Character Format

II. Hexadecimal

Here is the example data shown in hexadecimal format.

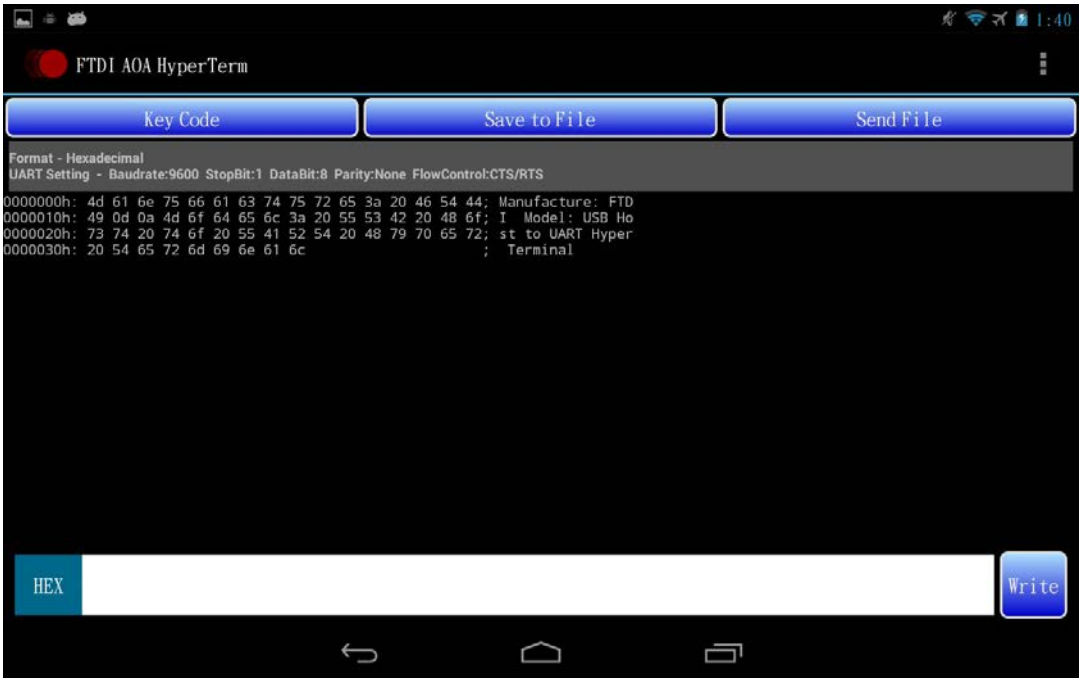


Figure 21 Hexadecimal Format

Note that when content format is hexadecimal, the new incoming data sent to Android device won't be shown.

3.3.2 Font Size

Select the font size of the content shown in the data area. The default font size is 12.

Figure 22 Select Font Size

3.3.3 Save Content Data

Save the data currently shown in the data area into a new file or an exist file. The process is same with 2.3.1 Receive File - Step 3: Select file destination - I.

3.3.4 Clean Screen

Clean all content in data area.

3.3.5 Echo

Select the echo function to be on or off. Default echo setting is on.

The data sent by tapping the “Write” button is shown in the data area when echo function is on.

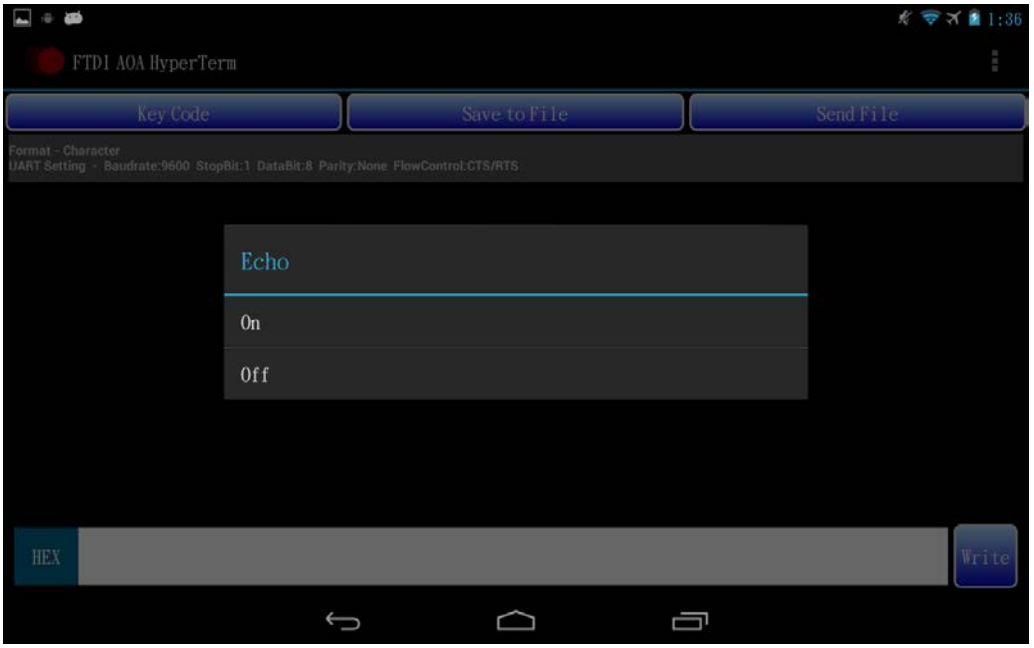
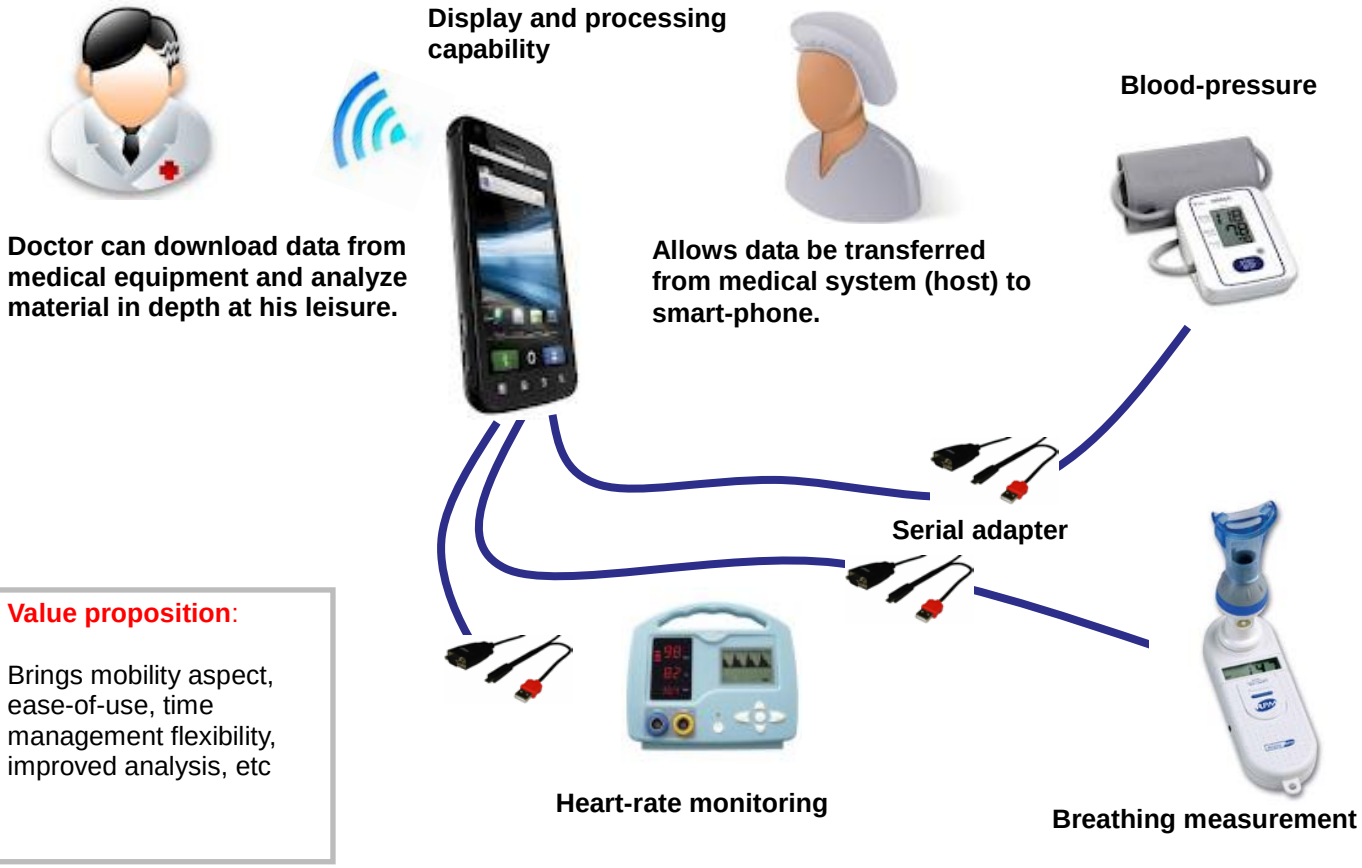


Figure 23 Select Echo Function

Typical applications

1. Medical equipment, patient monitoring



Value proposition:

Brings mobility aspect, ease-of-use, time management flexibility, improved analysis, etc

2. Fitness equipment

- Usage: Download workout data
  - Allows data be transferred to smart-phone.
  - Application on smart-phone can be accessed and used to analyze and display data.
  - Graph improvement, fitness levels, calorie balance
- Interact with other inputs; food intake
  - Value proposition: Brings mobility aspect, ease-of-use, time management flexibility, improved analysis, becomes a potential competitive feature for the product
  - Platform resource used: Display, processing capability, and capability to have a richer user ecosystem if they utilize the fitness data with other data.

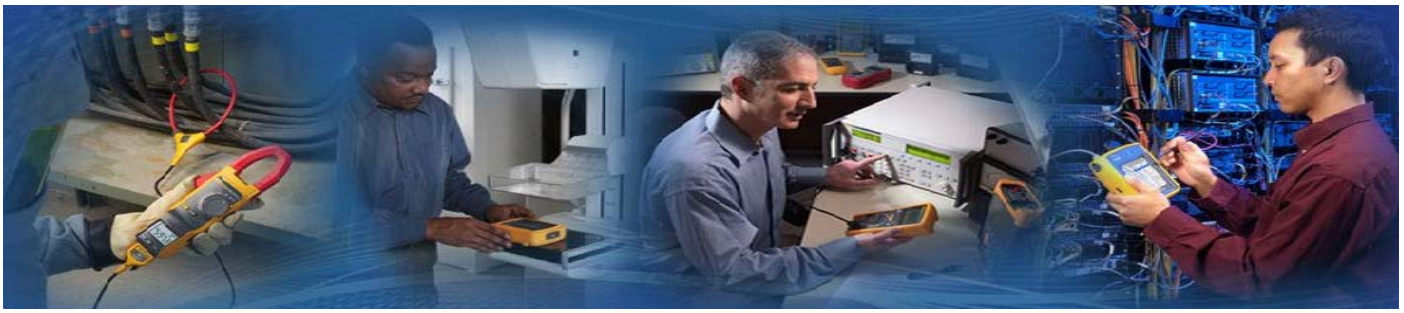
…similar usage for industrial equipment, meters, etc

3. Android Cable Applications

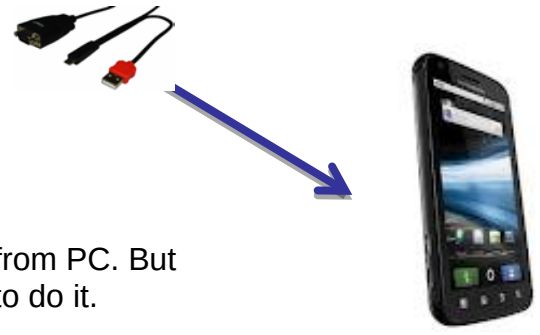
Android USB to UART cable (AOA or J2XX):

Android Hyper terminal utility:

4. Instrument USB Probe for Android



5. LED signage



In the past, the LED signage content update is from PC. But now they could use Android cell phone or PAD to do it.

Acronyms and Abbreviations

Terms	Description
AOA	Android Open Accessory
CTS	Clear To Send
HEX	Hexadecimal
RTS	Request To Send
RXD	Received Data
TTL	Transistor-Transistor Logic
TXD	Transmitted Data
UART	Universal Asynchronous Receiver Transmitter
USB	Universal Serial Bus

Regulatory Compliance

Disclaimer

Information in this document is subject to change without notice. The manufacturer does not make any representations or warranties (implied or otherwise) regarding the accuracy and completeness of this document and shall in no event be liable for any loss of profit or any other commercial damage, including but not limited to special, incidental, consequential, or other damages.

CE Certification

This equipment complies with the requirements relating to electromagnetic compatibility.

It has been manufactured under the scope of RoHS compliance.

FCC Compliance Statement

This equipment generates and uses radio frequency and may cause interference to radio and television reception if not installed and used properly. This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

You are cautioned that changes or modification not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation

WEEE (Waste of Electrical and Electronic Equipment), Recycling of Electronic Products

In 2006 the European Union introduced regulations (WEEE) for the collection and recycling of all waste electrical and electronic equipment. It is no longer allowable to simply throw away electrical and electronic equipment. Instead, these products must enter the recycling process.

Each individual EU member state has implemented the WEEE regulations into national law in slightly different ways. Please follow your national law when you want to dispose or any electrical or electronic products. More details can be obtained from your national WEEE recycling agency.