



# AX9

## User Manual

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## Table of Contents

<b>1.</b>	<b>Notification .....</b>	<b>3</b>
	1.1. Disclaimer .....	3
	1.2. Copyright.....	3
	1.3. Warning.....	3
<b>2.</b>	<b>Introduction.....</b>	<b>4</b>
<b>3.</b>	<b>Installation.....</b>	<b>5</b>
	3.1. Package Content .....	5
	3.2. AX9 OBD-II Compliant .....	5
<b>4.</b>	<b>Hardware Features .....</b>	<b>6</b>
	4.1. OBD-II Protocol .....	6
	4.2. J1939 Protocol .....	6
	4.3. Mini USB Port and Driver Installation.....	7
	4.4. Buzzer Operation .....	8
	4.5. Power Supply.....	8
	4.6. SIM Card Installation.....	9
	4.7. LED Indicators .....	10
<b>5.</b>	<b>Configuration .....</b>	<b>11</b>
	5.1. Connecting a Device Using HyperTerminal .....	11
	5.2. Connecting a Device Using AXTool .....	15
	5.3. Firmware Upgrade .....	20
<b>6.</b>	<b>Appendix.....</b>	<b>21</b>
	6.1. FCC Regulations.....	21
	<b>Radiation Exposure Statement: .....</b>	<b>21</b>

# 1. Notification

## 1.1. Disclaimer

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## 1.3. Warning

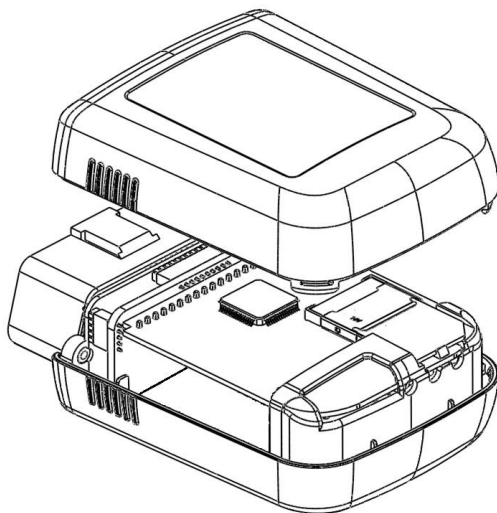
Connecting of the input wires can be hazardous to both the installer and your vehicle's electrical system if not done by an inexperienced installer. This document assumes you are aware of the inherent dangers of working in and around a vehicle and have qualified understanding of electrical behaviors.

## 2. Introduction

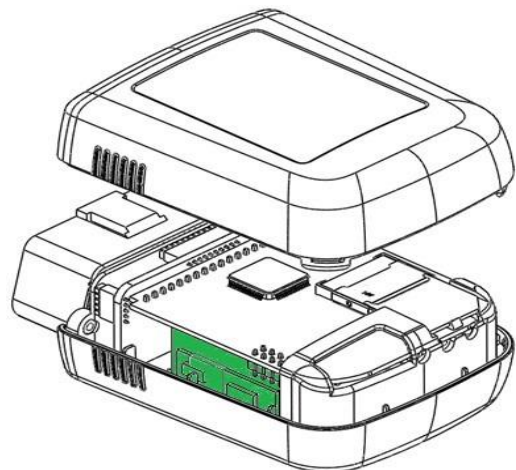
Congratulations on your purchase of the ATrack AX9 GPS device, combining with the most comprehensive and economical vehicle diagnostics technology, which provides real-time engine monitoring. The engine diagnostic data is collected through the vehicle's OBD-II communication port and is transmitted along with GPS data to the control center over a mobile network, for instance, GSM, GPRS, UMTS or CDMA. In this way, potential engine problems can be identified earlier before the vehicle breaks down at an inopportune time. Furthermore, you may configure other advanced driving behavior events such as harsh braking, sudden acceleration, speeding, cornering, and much more in order to reduce the risks of vehicle damage and drive down the costs of fuel.

Depending on your needs, the AX9 will come with an embedded Bluetooth module (refer to Chapter 6 for more information). This user manual is intended to guide you through the installation and configuration process. It also highlights the hardware features and Bluetooth applications.

**The AX9 without Bluetooth module**



**The AX9 with Bluetooth module**



## 3. Installation

### 3.1. Package Content

When you open the package, verify that you received the following:

- AX9 Device \* 1



- USB Cable \* 1



#### Operational accessories:

- Low Profile OBD-II Extension Cable



- OBD to J1939 Adaptor



### 3.2. AX9 OBD-II Compliant

OBD-II is a set of standards and practices defined by SAE (Society of Automotive Engineers) in the early 1990s. But some automobile manufactures do not follow it completely. Therefore, ATrack cannot guarantee each vehicle's OBD-II connected performance. For more information about the AX9 OBD-II compliance, please refer to the "ATrack AX Series OBD-II Compliant Guide" document for details.

## 4. Hardware Features

### 4.1. OBD-II Protocol

There are five signaling protocols that are permitted with the OBD-II interface. Most vehicles have been implemented with only one of the protocols. The AX9 features a superior protocol detection algorithm that ensures the device connects reliably even to vehicles that do not fully conform to the OBD-II standards. The AX9 supports the following legislated OBD-II protocols:

- J1850 PWM (Ford vehicles)
- J1850 VPW (GM vehicles)
- ISO9141-2 (Asian, European, Chrysler vehicles)
- ISO 14230-4 KWP
- ISO 15765-4 CAN (11/29 bit ID, 250/500 Kbaud)

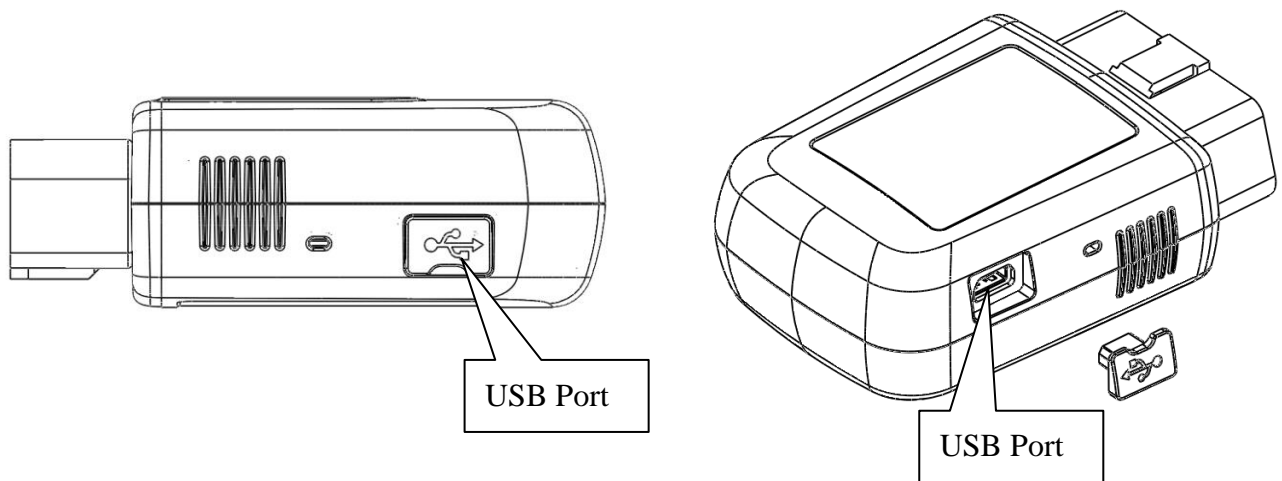
The AXTool provides the “OBD Live Data” viewer for showing OBD data in real time. Refer to Section 5.2 for details.

### 4.2. J1939 Protocol

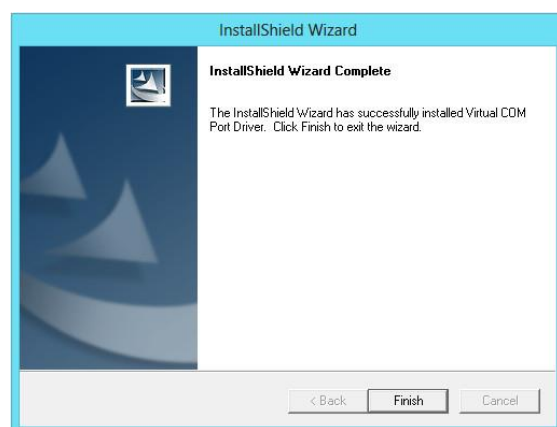
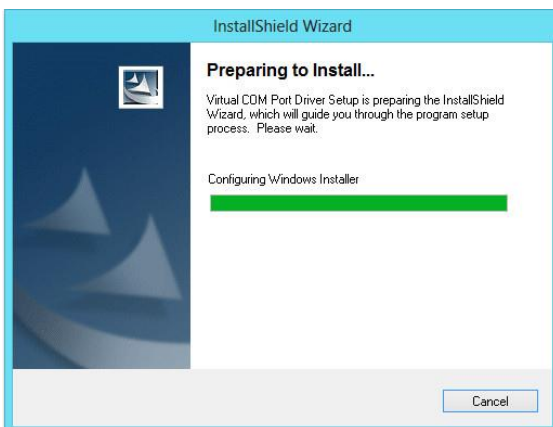
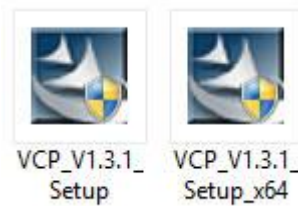
The feature of J1939 should be enabled manually by **AT\$OBDS** and **AT\$FMSC**. Please refer to AX protocol document for more detail.

### 4.3. Mini USB Port and Driver Installation

The Mini USB connection is used for the following purposes: configuring parameters and firmware upgrade. When the AX9 is connected to your laptop/PC via a Mini USB cable, the OBD-II and GSM/GPRS functions are switched off unless the main power is applied to the AX9 at the same time. The following figure shows the position of AX9's USB port.



Double click the USB driver VCP\_V1.3.1\_Setup/ VCP\_V1.3.1\_Setup\_x64. Then, click the Finish button to complete the process.



## 4.4. Buzzer Operation

The internal buzzer of the AX9 can be configured by any events or triggered by a remote server. Refer to the ATrack Protocol Document for details. When a device is configured and plugged into an OBD-II DLC connector, it performs some basic function tests. You can simply verify whether it is installed properly via buzzer indication. Please refer to the following table for details:

Buzzer Indication	Description
Beep 1 time	Device Power ON
Beep 2 times	OBD Protocol Connected
Beep 3 times	GSM/GPRS Connected
Beep 4 times	GPS Fix

## 4.5. Power Supply

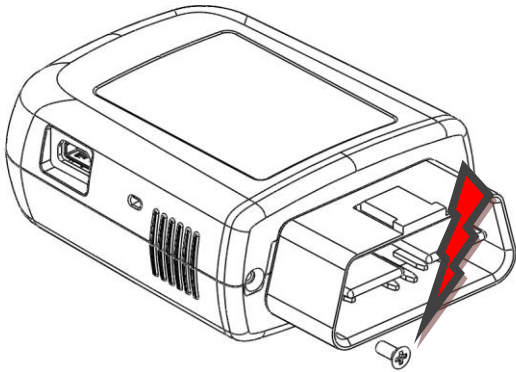
The AX9 device is connected to the OBD-II SAE J1962 connector of a vehicle and draws power from the OBD port. No additional power cabling is required for the operation. If the OBD port of a vehicle is covered or you need to install AX9 in another place for better GPS reception, the optional low profile OBD-II extension cable is required.



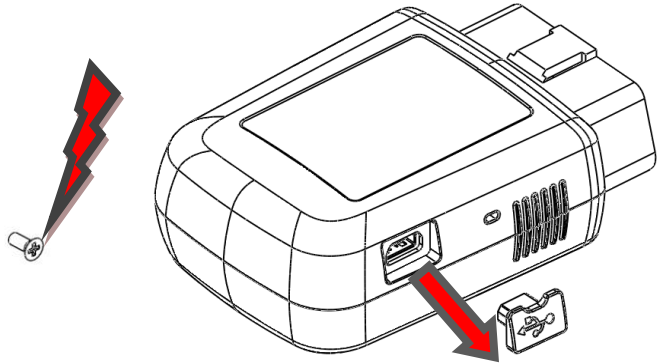
## 4.6. SIM Card Installation

AX9 supports SIM cards with 1.8V (ISO/IEC 7816-3 class C) or 3V (ISO/IEC 7816-3 class B) operating voltages. To install SIM, remove the screws, dust cap and the cover.

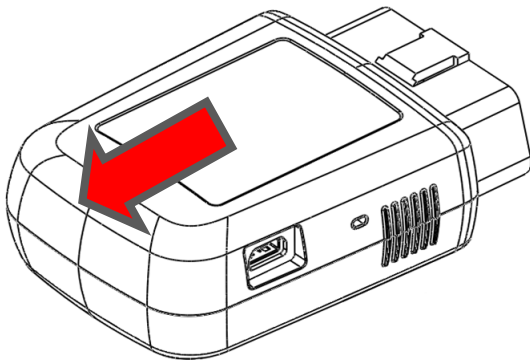
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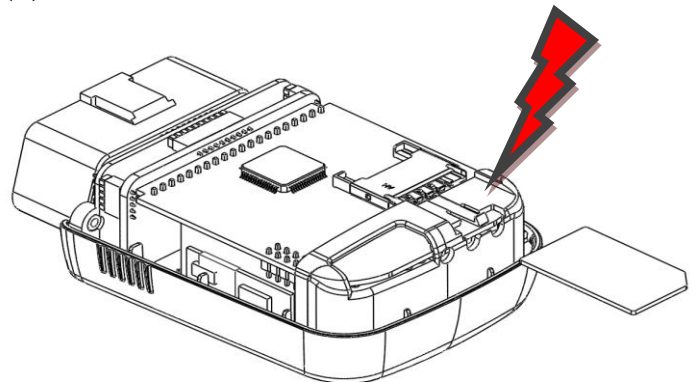
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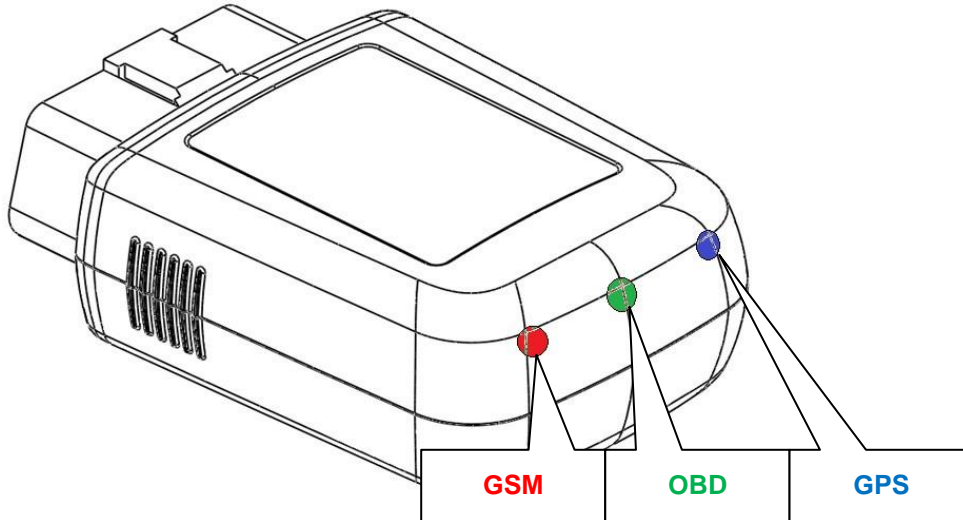
(3)



(4)



## 4.7. LED Indicators



The following table describes the LED states:

LED Indicators	Color	LED Status	Description
OBD	Green	Solid OFF Fast blinking Blinking every 10 seconds	OBD Protocol not found OBD-II data transmission. Deep sleep mode
GPS	Blue	Solid OFF Blinking every 1 second Solid ON	GPS power OFF GPS not fix GPS Location Fix
GSM	Red	Solid OFF Blinking every 1 second Blinking every 2 second Blinking twice every 2 second	GSM Power OFF GSM no signal GSM registered GPRS connected

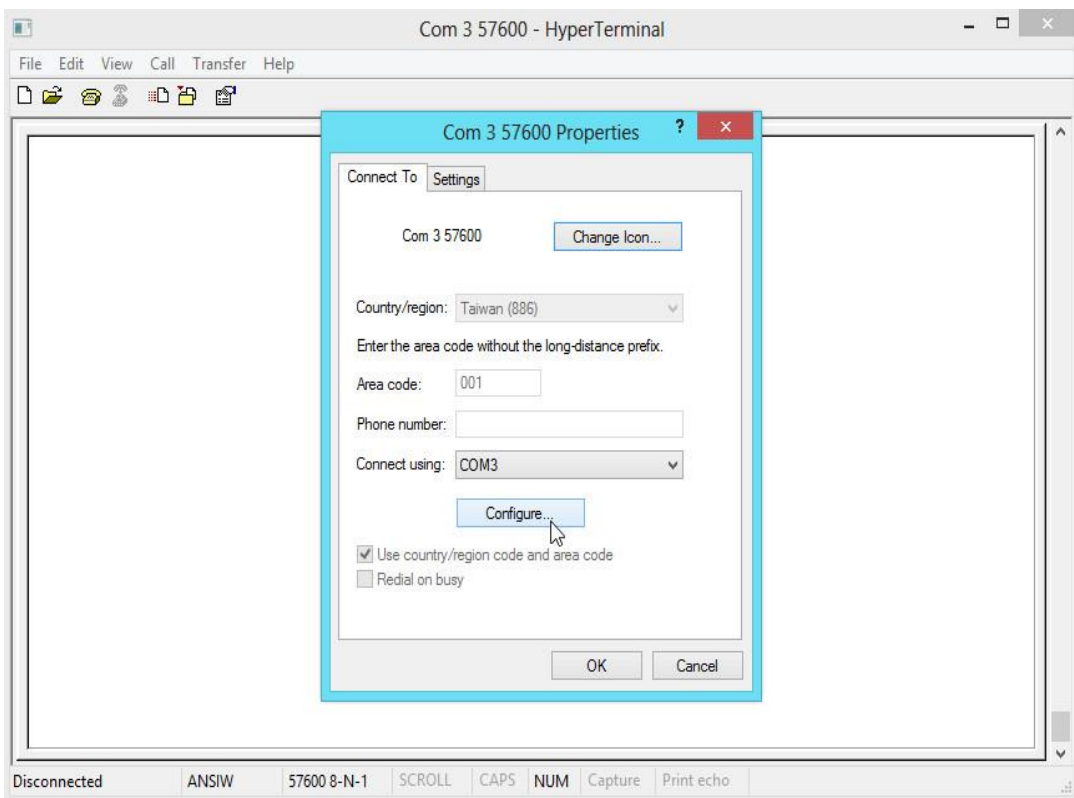
# 5. Configuration

You can explore many of AX9's great features through AT commands. The commands can be sent to AX9 via USB, SMS or cellular network (e.g. GPRS/CDMA/UMTS).

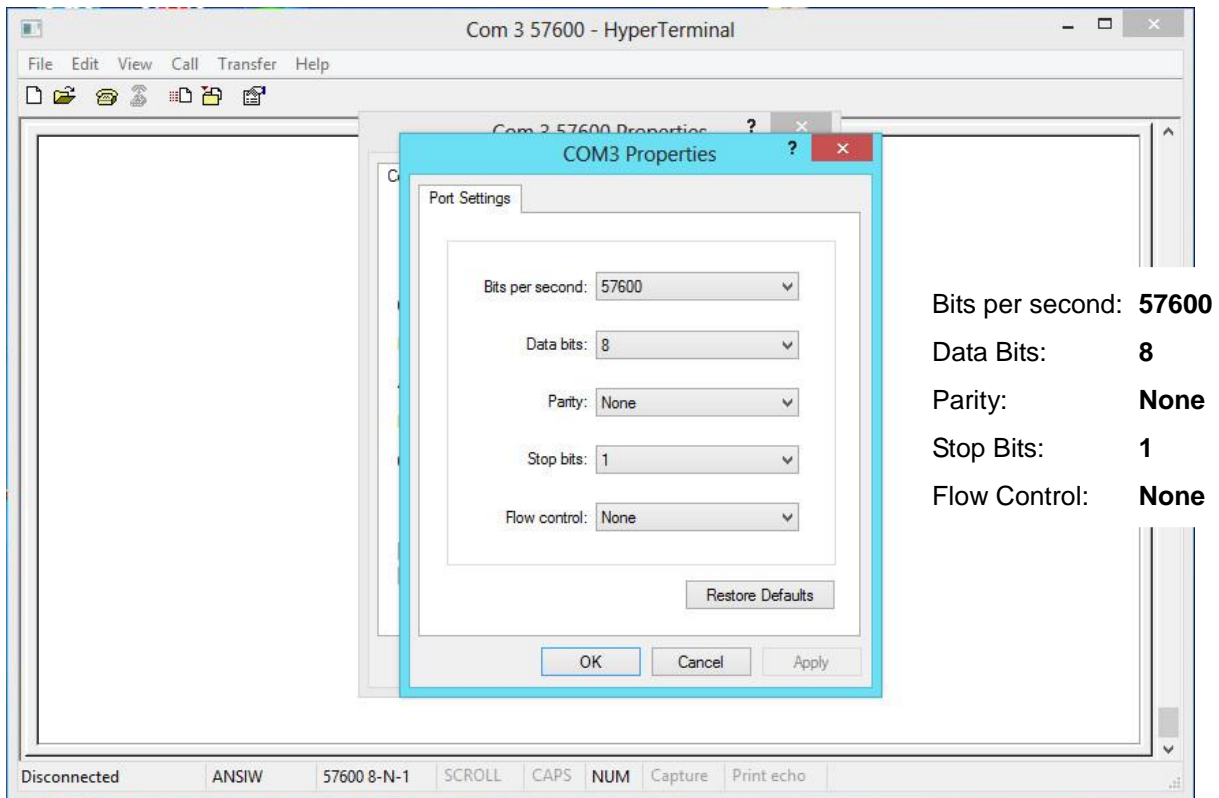
## 5.1. Connecting a Device Using HyperTerminal

The following example shows how to connect the AX9 through Hyper Terminal. You may use other popular terminal emulators such as Putty or Tera Term Pro to establish a console session with the AX9.

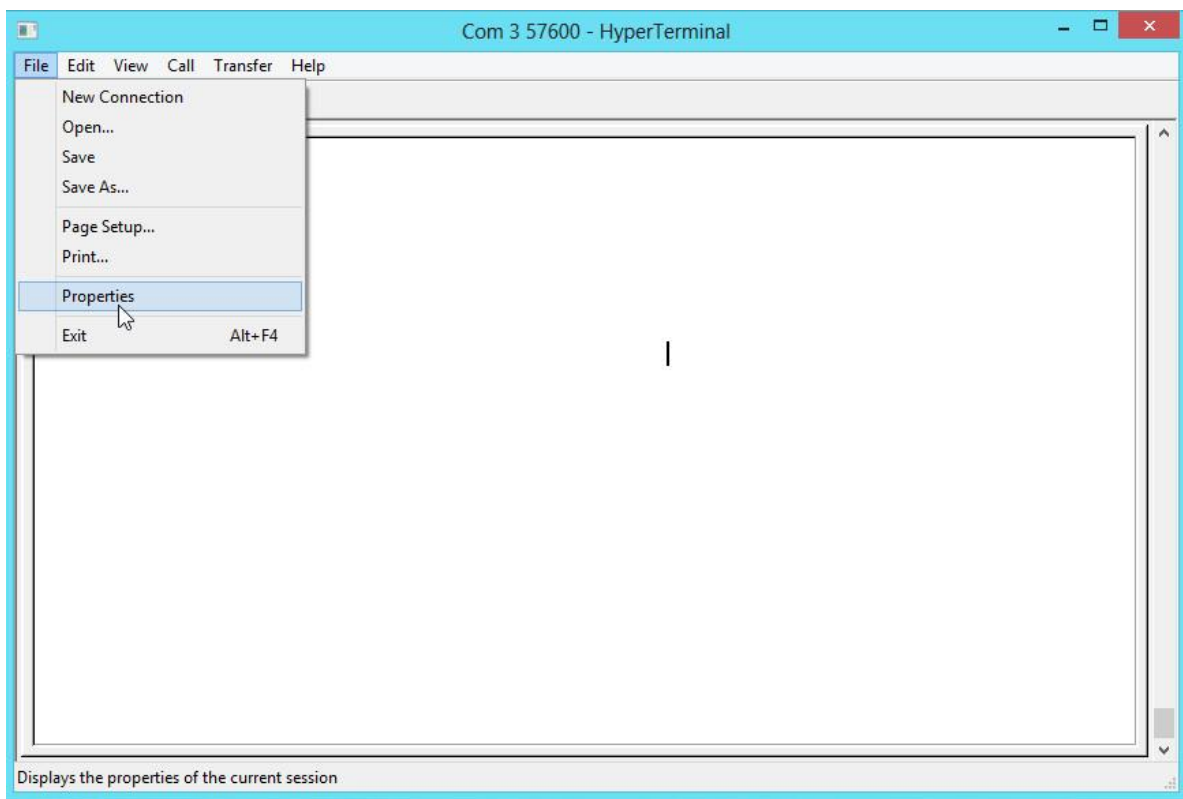
(1) Run HyperTerminal and select the correct COM port and click on the **[Configure...]** button.



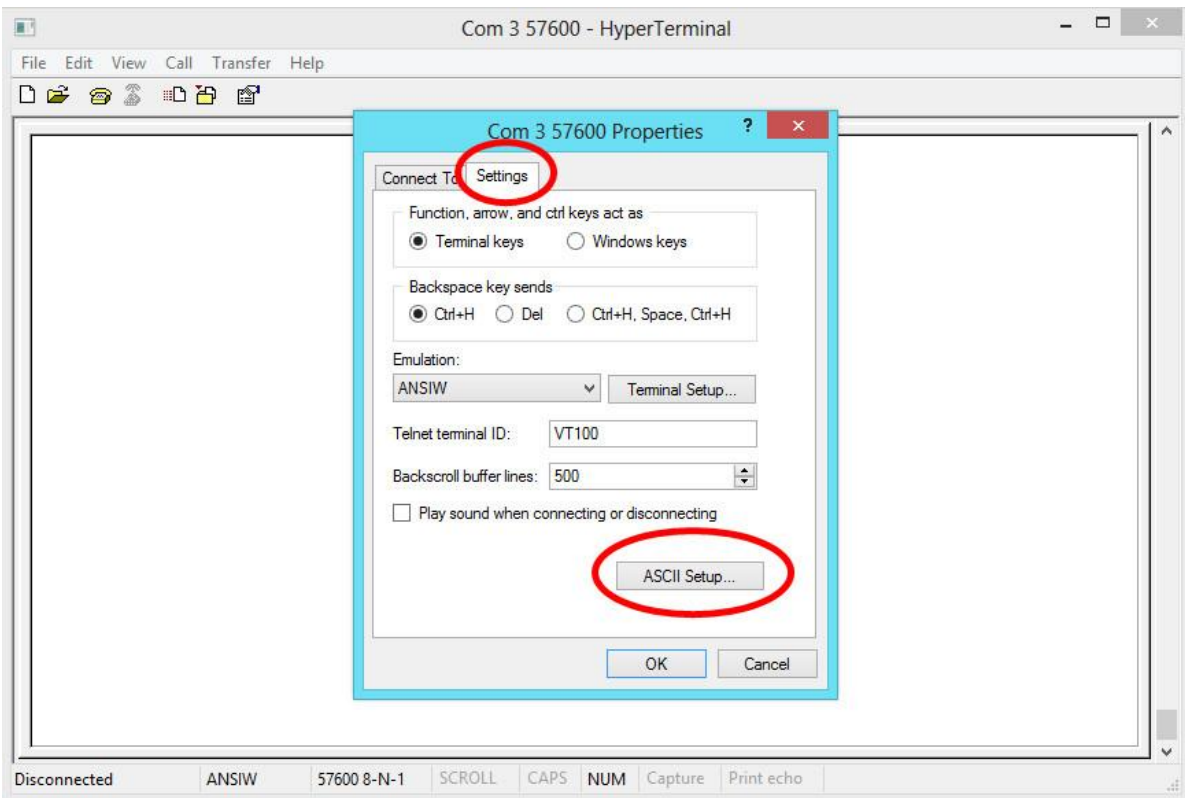
(2) Port Settings should be as follows. Click on the **[OK]** button to close the Properties window.



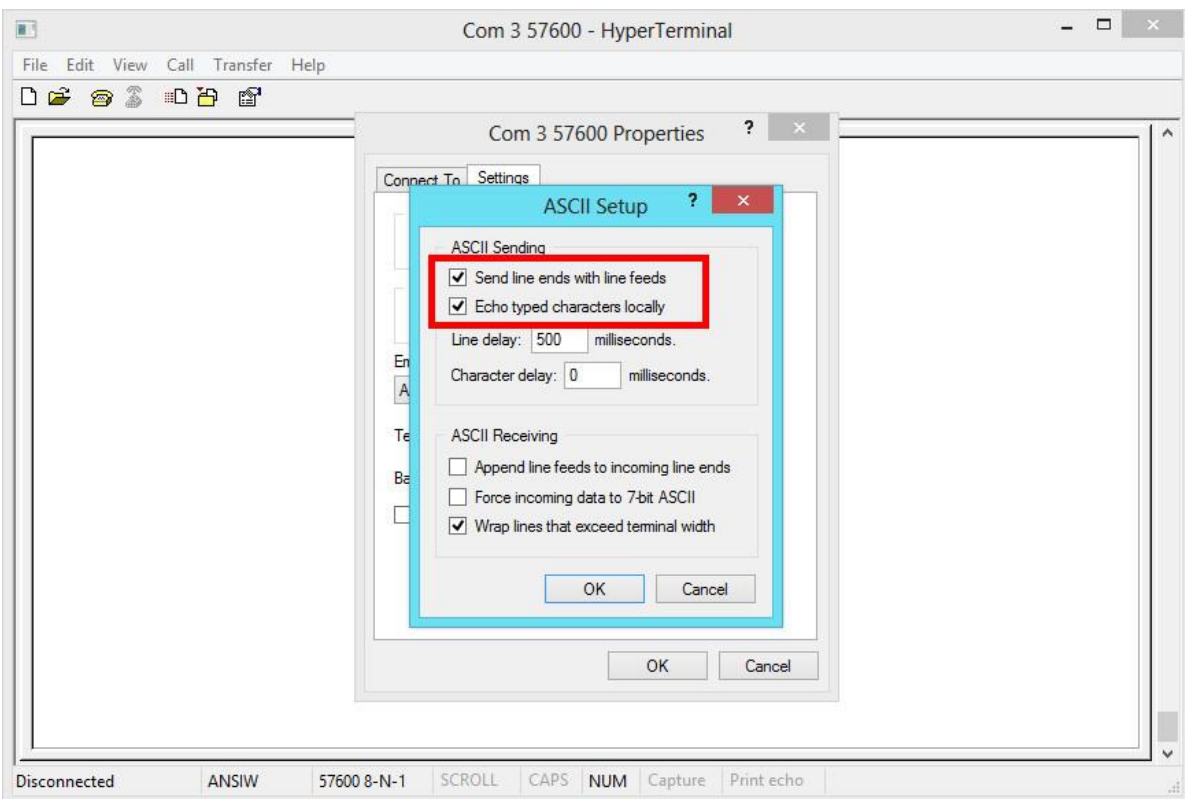
(3) Click on **[File]→[Properties]**



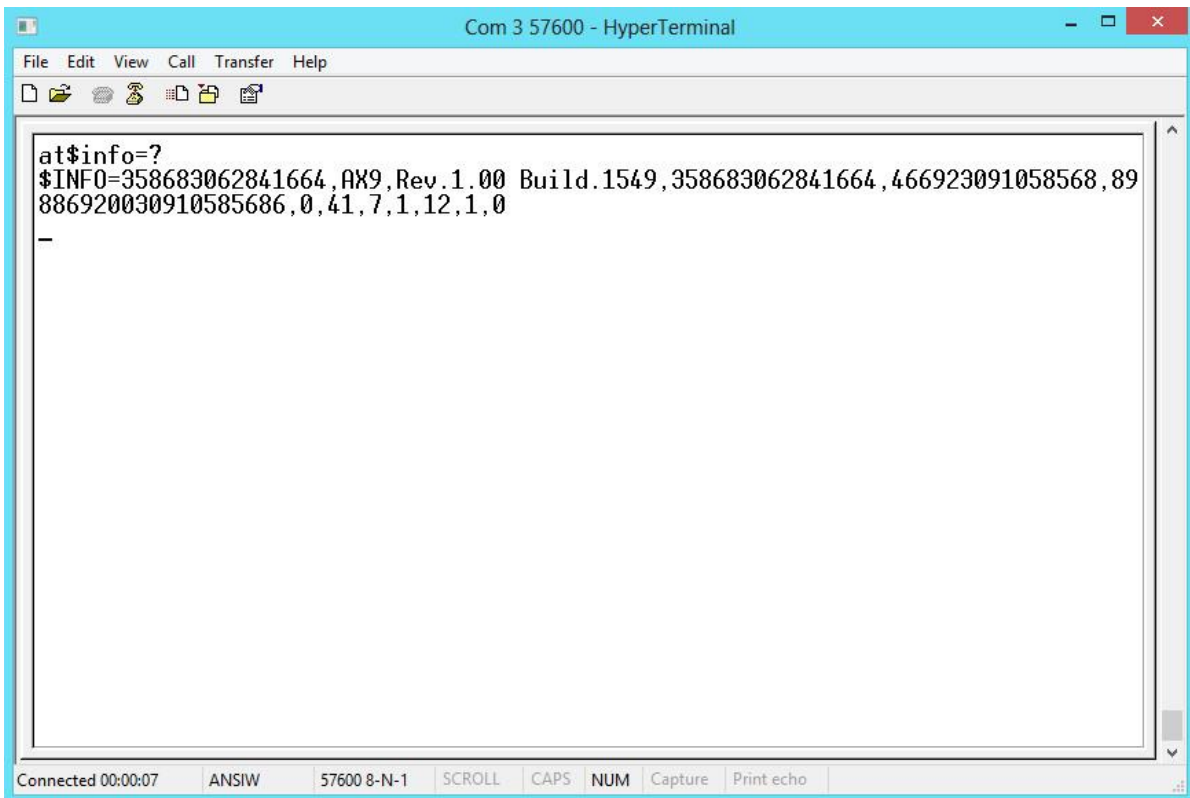
(4) Click on the **[Settings]** tab and click on the **[ASCII Setup...]** button.



(5) Check the following options and click on the **[OK]** button.



(6) Power up the device and you can now begin to send AT commands to query the device. Please refer to the ATrack Protocol Document for details.



## 5.2. Connecting a Device Using AXTool

The AXTool is a simple configuration tool which is useful for users to configure the basic settings of the AX9. For advanced configurations, please refer to the ATrack Protocol Document for details.

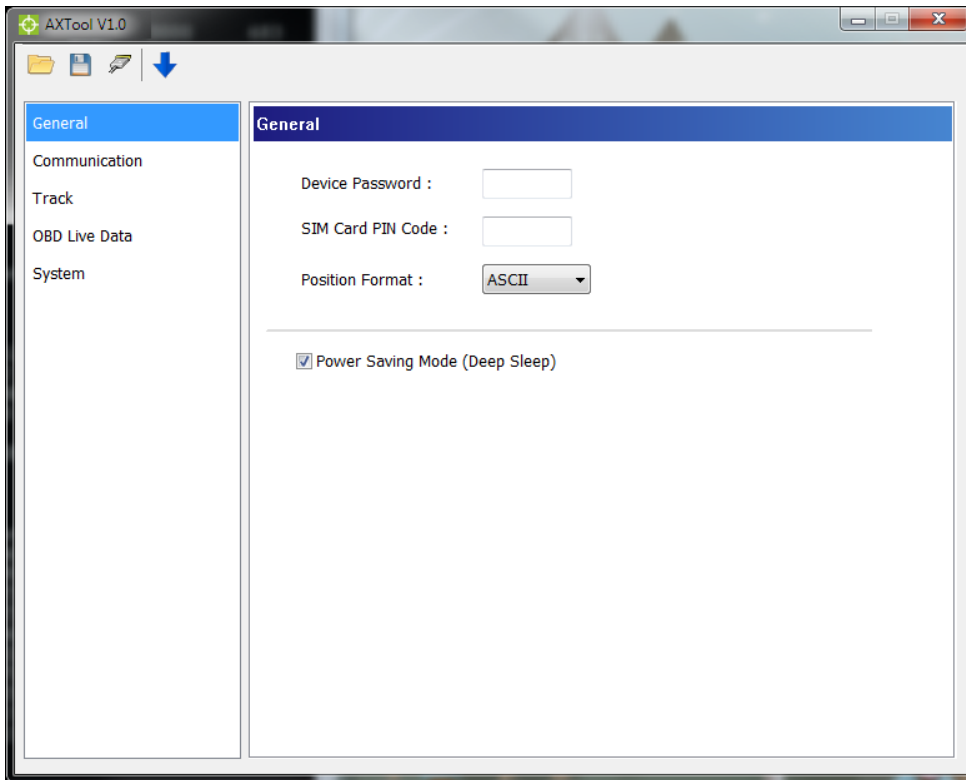
- **General Setting**

[Device Password]: The device password is used for protecting device configurations. You can have the maximum of 6 characters.

[SIM Card PIN Code]: Enter the PIN code of a SIM card if you a PIN code enabled.

[Position Format]: Select position format for all reports.

[Power Saving Mode]: Enable/Disable the power saving mode. When the power saving mode is enabled, the AX9 device will go into deep sleep mode after 1 minute of engine off.



- **Communication Setting**

[GPRS Enable]: Enable GPRS communication

[Socket Type]: Select TCP or UDP for GPRS communication

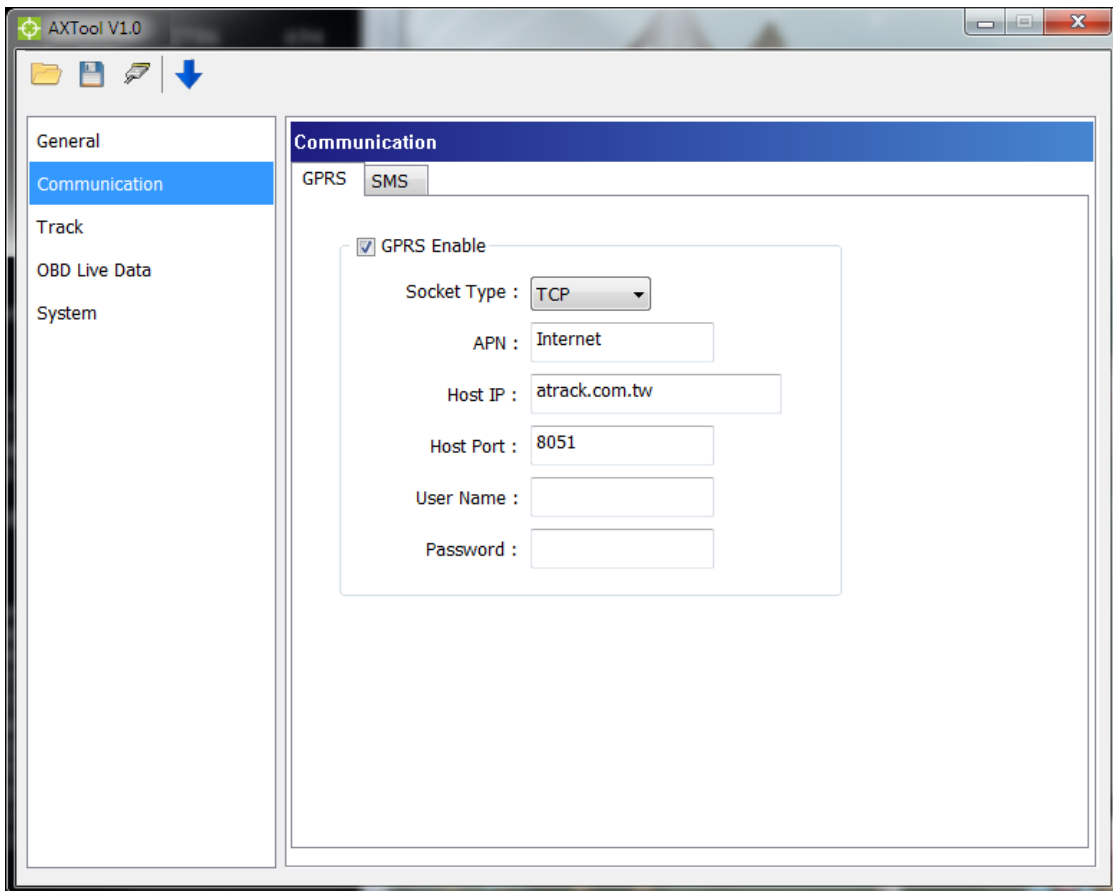
[APN]: Access Point Name for GPRS connection. (Please contact your cellular network carrier for the information)

[Host IP]: Enter the IP address or domain name of host server

[Host Port]: Enter Port number of the remote host server

[User Name]: The GPRS user name. (Please contact your cellular network carrier for the information)

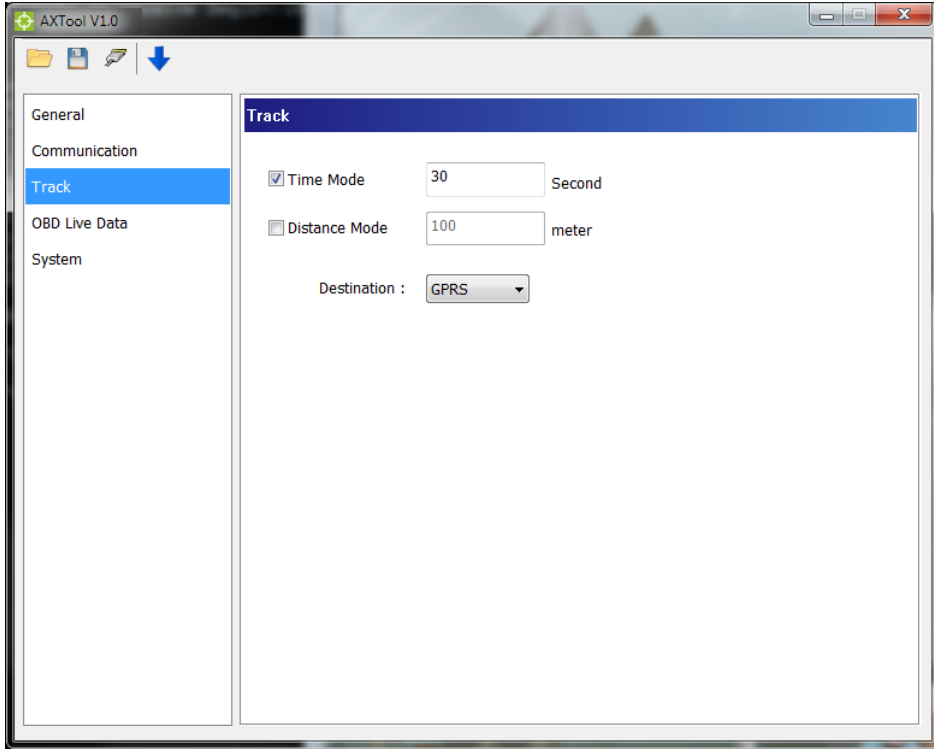
[Password]: The GPRS password. (Please contact your cellular network carrier for the information)





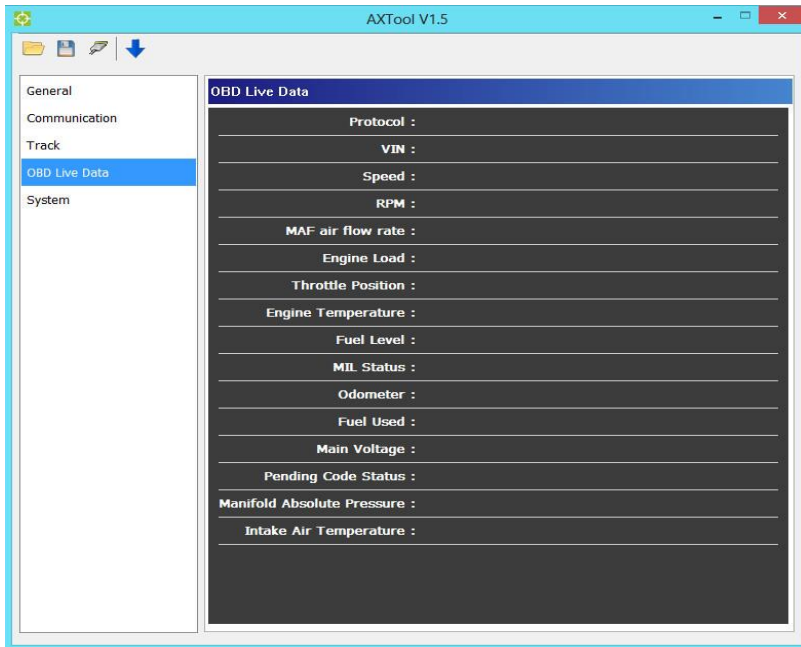
- **Track Setting**

You may configure a tracking interval when the vehicle engine is ON. When [Time Mode] and [Distance Mode] are both selected, the tracking behavior will operate in AND condition.



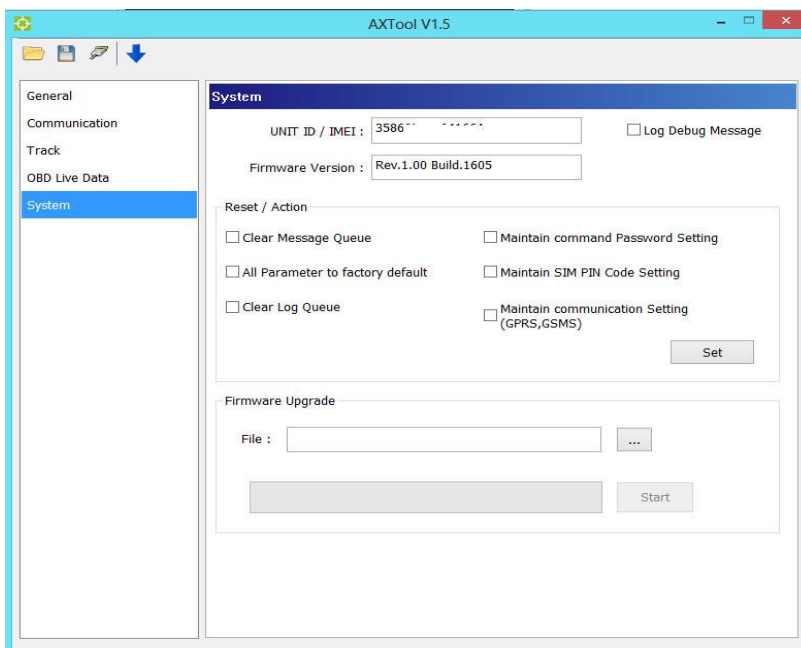
- **OBD Live Data**

When the AX9 is connected to a vehicle's OBD-II port, you will see the OBD live data such as VIN, Speed, RPM, MAF air flow rate, Engine Load, Throttle Position, Engine Temperature, Fuel Level, MIL Status, Odometer, Fuel Used, and Main Voltage.



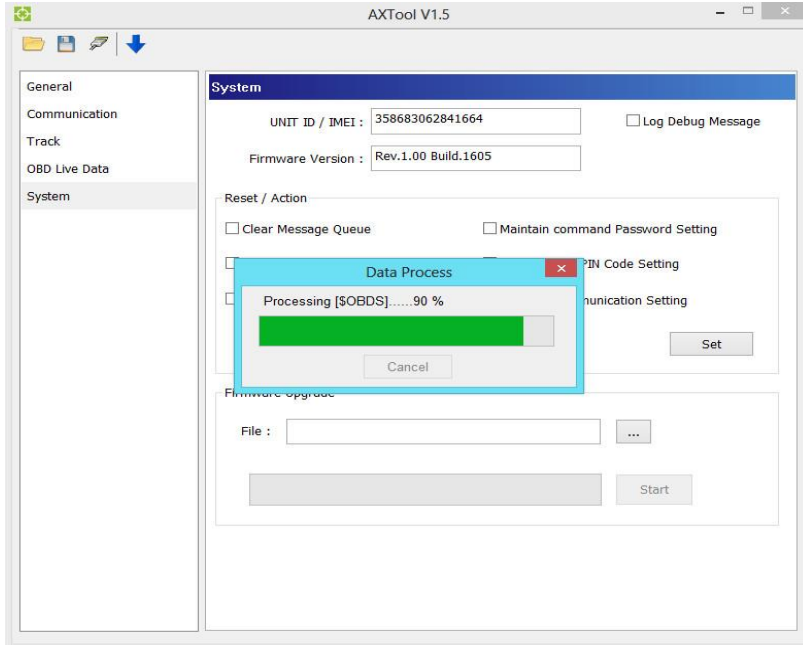
- **System Setting**

The [System] setting will show the current connected device information. The [Reset/Action] function can be used to reset parameters or clear buffered messages of the device.



- **Uploading Setting To Device**

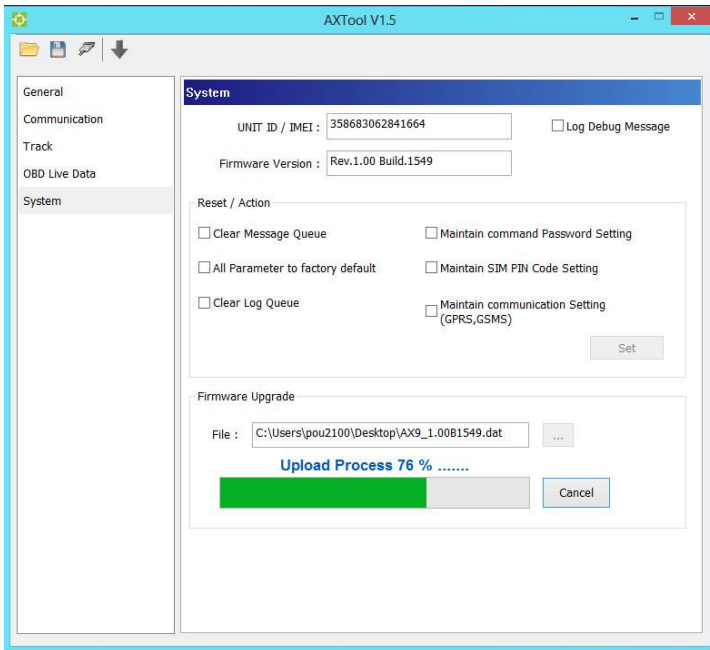
Once all the settings are entered, use the Blue Downward Arrow (↓) to upload the settings to the device. A popup window will show the progress. When it finishes, the popup window will close.



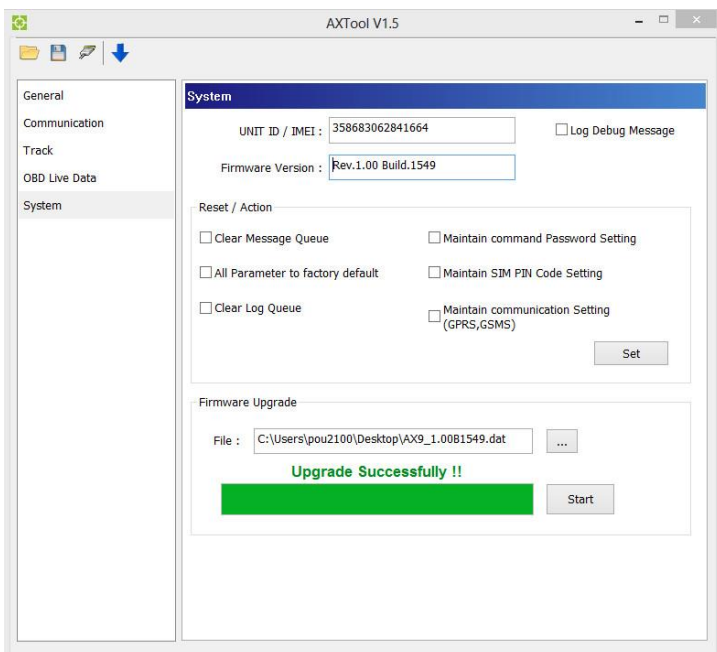
### 5.3. Firmware Upgrade

Open the AXTool program and click on [System] on the menu.

Browse the firmware file which is provided by ATrack and click on the [Start] button.



When you see “Upgrade Successfully!!”, that means the device firmware is upgraded.



## 6. Appendix

### 6.1. FCC Regulations

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.

This device has been tested and found to comply with the limits for 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. This equipment generates, uses and can radiated radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

**Reorient or relocate the receiving antenna.**

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body. This equipment must not be co-located or operated in conjunction with any other antenna or radio transmitter.