CAREU UCAN 3G
User Guide

Version: 0.1

Reference No.: AVL

Date: 2014/8/26

SYSTEMS & TECHNOLOGY CORP.

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Chapter 1 Introduction

Thank you for purchasing CAREU UCAN 3G GPS Vehicle Tracker, a plug-and-use device for tracking and vehicle status diagnostics.

1.1 Features

- SMS, GPRS TCP/UDP, USSD, FTP communications
- Plug-and-use design and cost effectiveness
- DTC OBD II error codes
- GSM/GPRS simultaneously
- Real-time tracking (Time, Distance Interval or Intelligent Mode, and Heading)
- Firmware upgrade over the air (via GPRS from FTP)
- Journey report wireless download
- Battery low alert
- Geofence reports
- Mileage reports
- User-defined reports
- Up to 100,000 data logs

1.2 Scope

This document will guides you to start the CAREU UCAN 3G Vehicle Tracker. However,as this document contains basic device configuration only, please see the CAREU UCAN 3G Protocol Document for the advanced information.

1.3 About CAREU UCAN 3G

Designed with the latest GPS technology, the CAREU UCAN 3G delivers positioning message by GSM wireless transmission to GIS platform, and then helps back-end users proceed with the analysis and the applications of vehicle transport, management, anti-theft, security and tracking.

A microcontroller can probe location and command data at regular intervals, derive actions from location, peripheral and control data, and execute such actions. Peripheral data indicates the status of various peripherals connected to and/or controlled by the device. Among the best features of the CAREU UCAN 3G Vehicle Tracker, in particular, they transmit data in ASCII mode (Intellitrac X Series compatible mode) or binary mode.

The firmware in the device applies intelligent filtering to overcome coverage limitations for both GPS and GSM/GPRS networks. Motion sensor controls the status of the device, whether in sleep, idle or fully-powered mode, and thereby controls the amount of current consumed by the device. The device supports over-the-air firmware upgrade to deliver additional functionality without physically touching the device once installed.

1.4   Hardware Architecture

As hardware is concerned, the CAREU UCAN 3G is comprised of a micro-controller, regulator, GPS receiver, GSM/GPRS modem, G-Force sensor, flash memory data storage.

● Users can connect PC's Hyper Terminal to the diagnostic setting port for the AVL configuration.

● G-Sensor is for car accident prevention, car tow-away warning and power management.
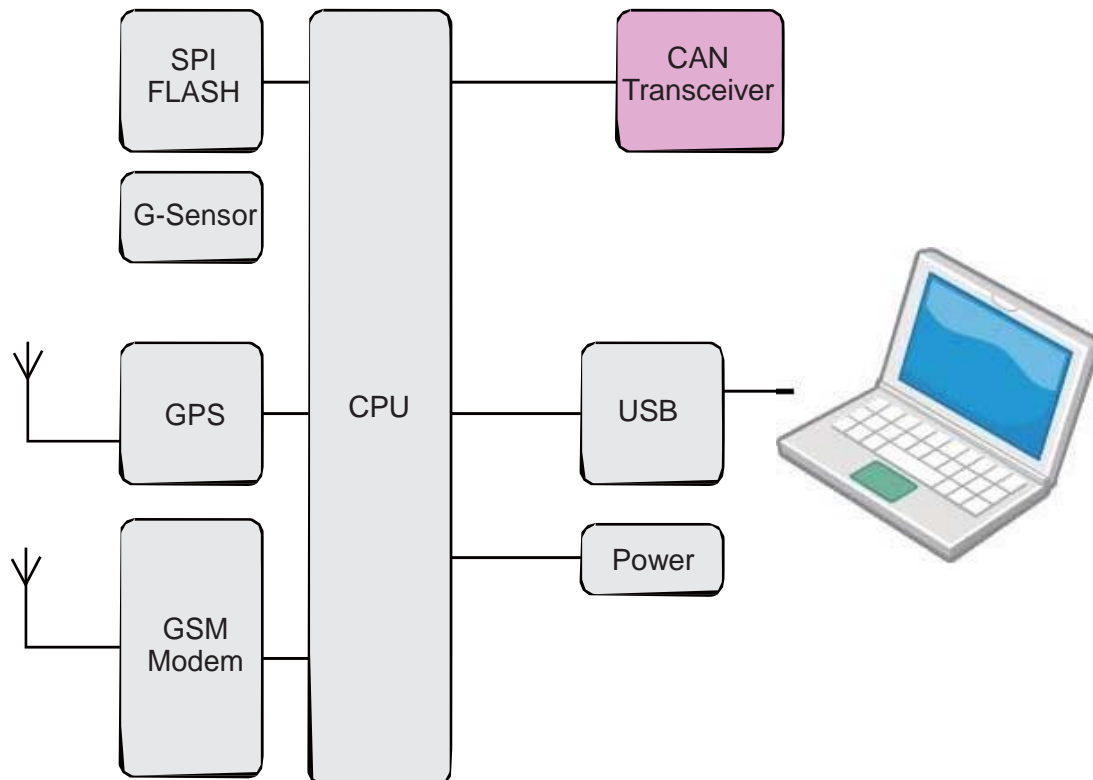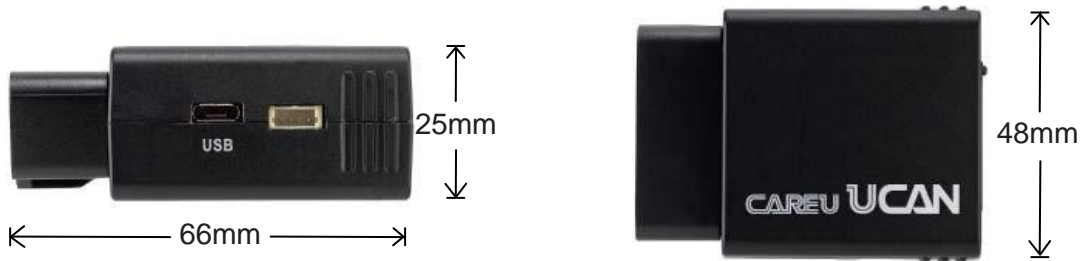

1.5   Related Document

[1] CAREU UCAN 3G Protocol Document

Chapter 2 Taking a Tour of CAREU UCAN 3G

2.1   Dimensions

Dimensions (L x W x H): 48mm x 66mm x 25mm

2.2   PIN Assignment

1.   Pin Definition of OBD II Connect

| Pin#	Signal Name	Description
1,3,8,9, 11,12,13	NC	No Connect
2	J1850 BUS+	SAE J1850 Data Transmission Cable (+)
4,5	GND	Signal Ground
6	CAN-H	ISO 15765-4; CAN Bus Diagnostic Cable (H Cable)
7	ISO-K	SAE J1850 Data Transmission Cable (-)
10	J1850 BUS	ISO 15765-4; CAN Bus Diagnostic Cable (L Cable)
14	CAN-L	ISO 15765-4; CAN Bus Diagnostic Cable (L Cable)
15	ISO-L	ISO-9141-2 Data Transmission Cable (L)
16	VIN	Battery Supply Input (12V/24V)

2. USB Port

3. SIM Card Slot

Chapter 3   Getting Started with CAREU UCAN 3G

To install the the CAREU UCAN 3G device, follow the instructions below for basic operations.

3.1   Hardware Installation

1. Installation Mode
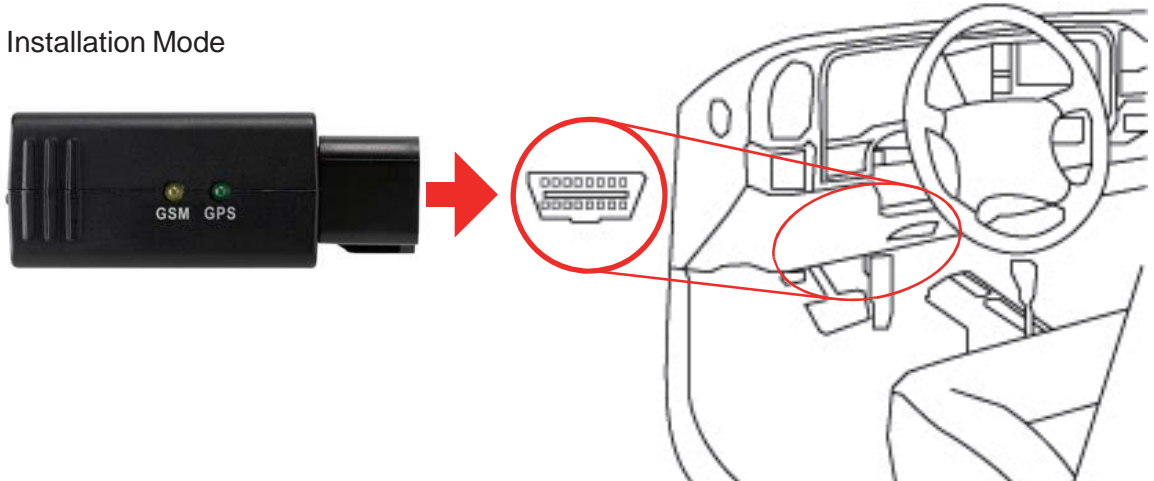
2. Mini USB Cable Connect

3. SIM Card Installation

## 3.2 USB Device Driver Installation

The CAREU UCAN 3G communicates with your host computer by the USB interface.

In some newer editions of Windows XP, the CAREU UCAN 3G device can be installed as a "virtual COM port" device whereby the CAREU UCAN 3G would automatically access Windows XP's inbox USB drivers. While in some other earlier editions of Windows XP, you would need to manually install the USB driver for the CAREU UCAN 3G device.

To install the device driver for the CAREU UCAN 3G, connect the CAREU UCAN 3G device to your system with an USB cable as mentioned in Mini USB Cable Connection on page 6.

As soon as the connection is made between the CAREU UCAN 3G and your computer, a balloon appears above the notification area saying an USB device is found.

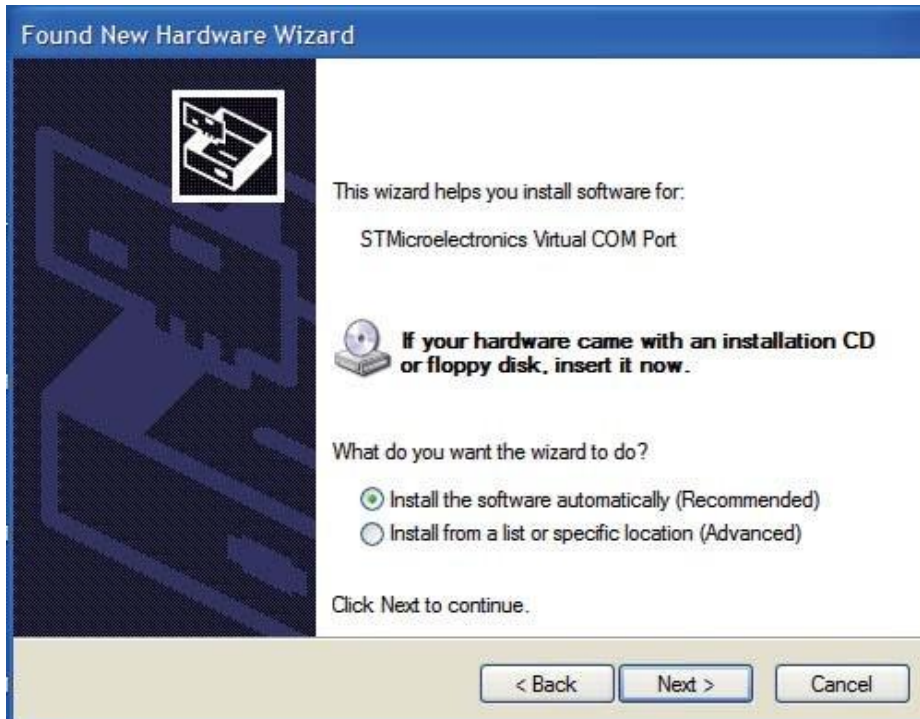Click on this balloon to start the **[Found New Hardware]** wizard.
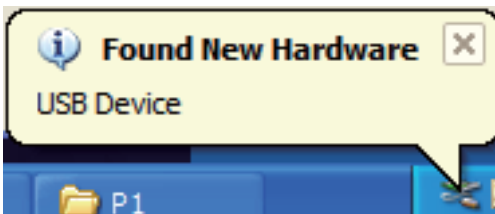
Select **No, not this time**. Press the **Next** button to proceed.

1. Automatic Installation

    If the wizard prompts to help you install the software for "STMicroelectronics Virtual COM Port". **Select Install the software automatically (Recommended)**. Press the **Next** button to proceed.
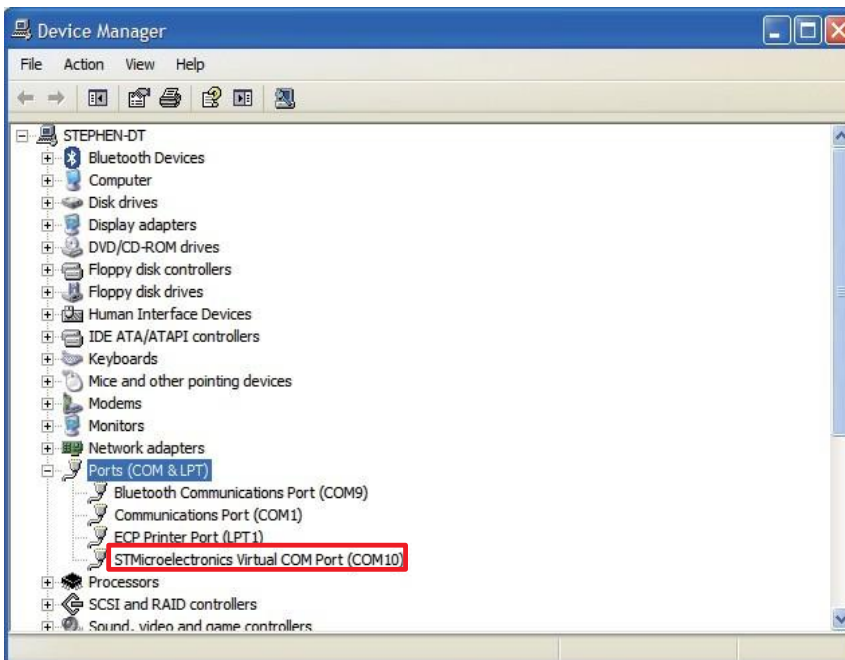

    The wizard proceeds to install the driver.

The installation completes.

In **[Device Manager]**, the CAREU UCAN 3G device is included under **Ports (COM & LPT)** as "STMicroelectronics Virtual COM Port". COM port number is displayed as well.

2. Manual Installation

   After you select **No, not this time**, if the wizard only prompts to help you install software for "USB device", you need to manually install the driver. Select **Install from a list or specific location (Advanced)**. Press the the **Next** button to proceed.
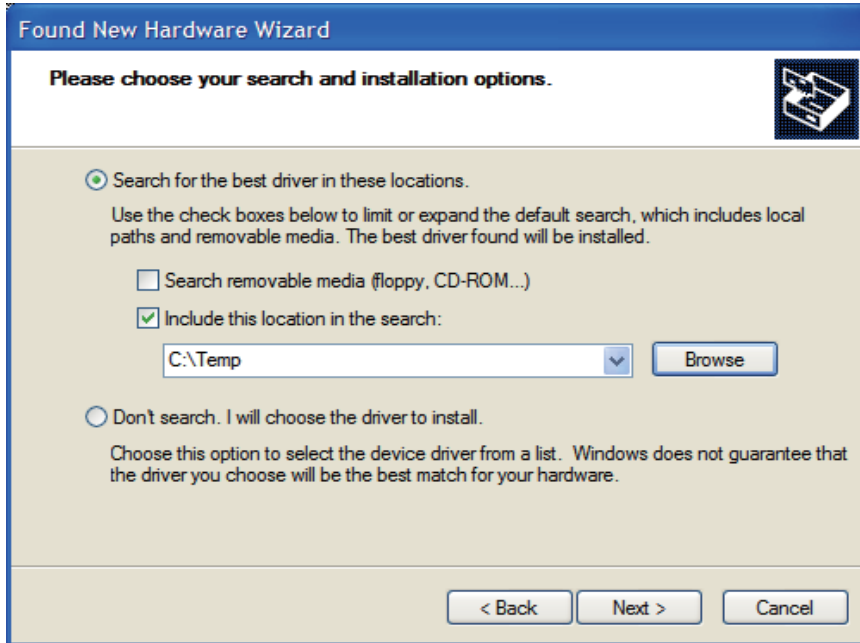

   Select **Search for the best driver in these locations**. Check **Include this location in the search**. Press the **Browse** button to assign where your the CAREU UCAN 3G device driver locates on your local disk.
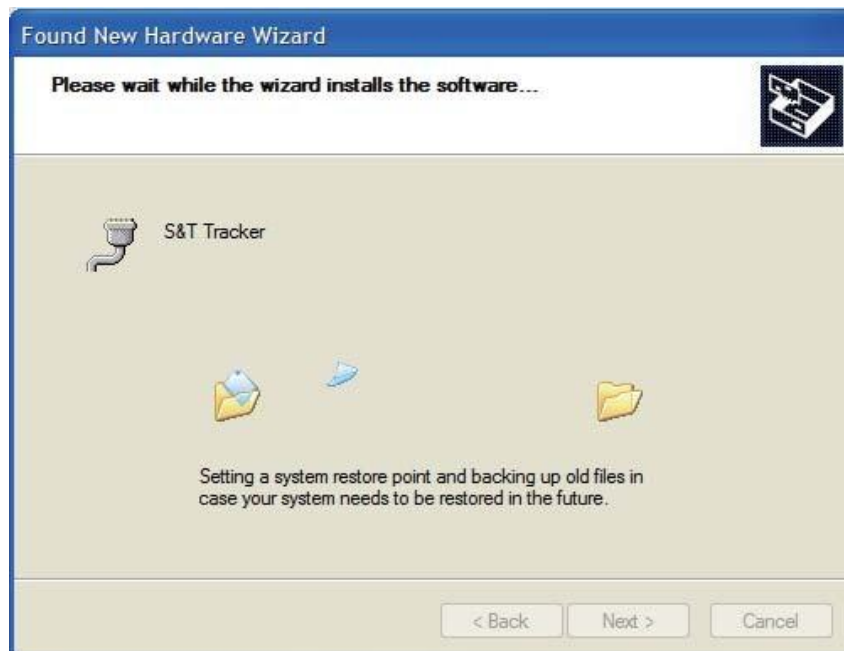
   Press the **OK** button.

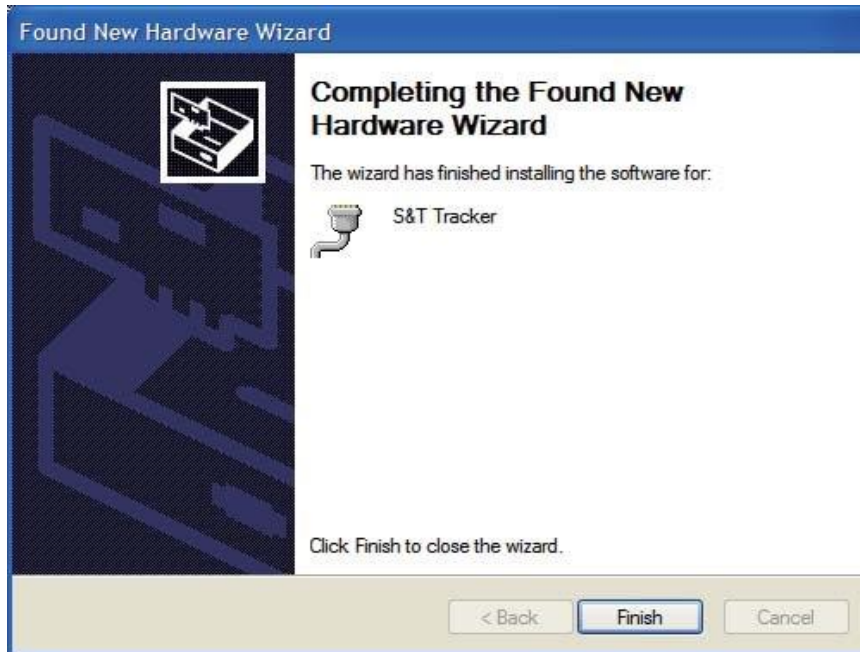   You can download the USB device driver from http://www.systech.com.tw/downloads-04.php ?id=34&page=downloads&lang=en
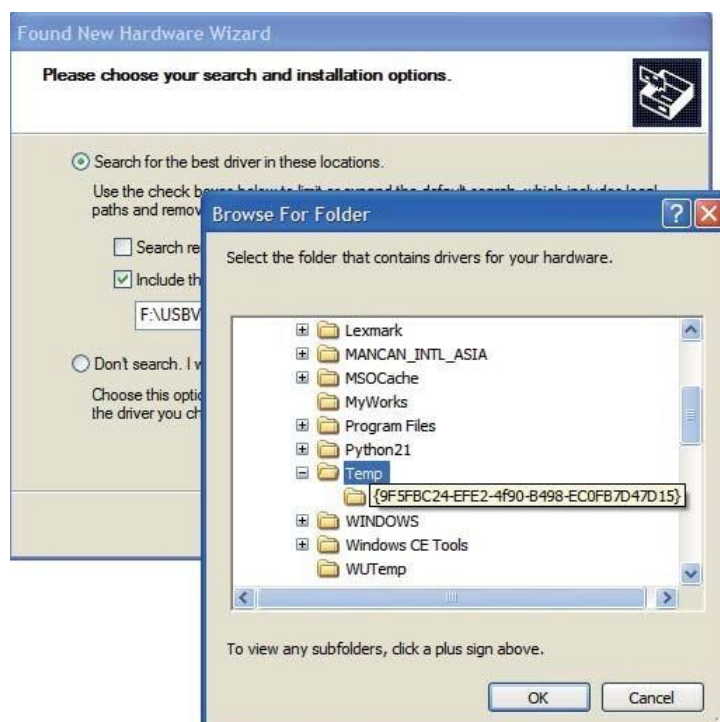
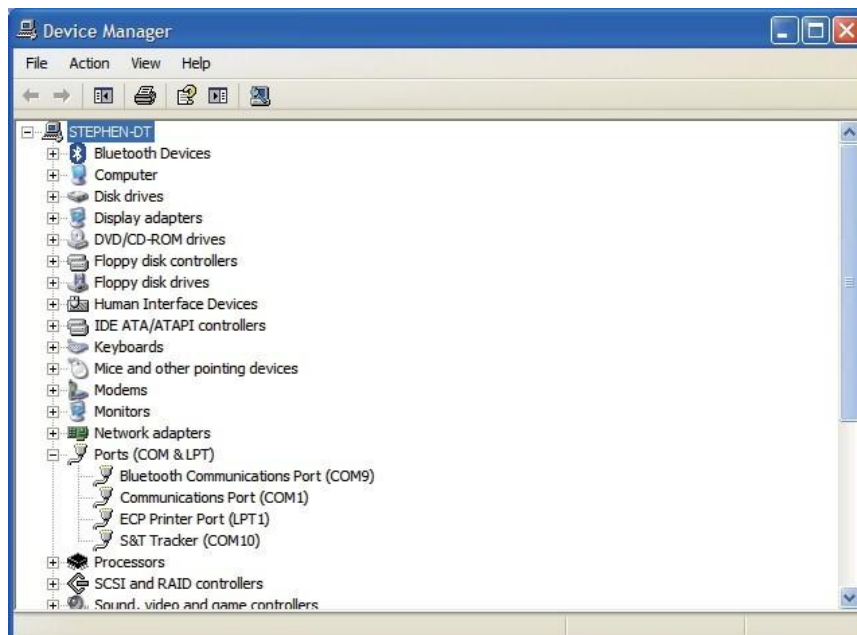Press the Next button to proceed.

The wizard proceeds to install the driver.

The installation completes.

In **[Device Manager]**, the CAREU UCAN 3G device is included under **Ports (COM & LPT)** as"S&T Tracker". COM port number is displayed as well.

3.3   Device Configuration

1. In Windows XP desktop, click **Start | All Programs | Accessories | Communications | HyperTerminal**.

2. If you are prompted to input the information of your location, complete them to proceed.

3. On the **File** menu of **HyperTerminal**, click **New Connection**.

4. In the **Name** box, type a name that describes the connection. In th**e Icon** box, click an appropriate icon. Press the **OK** button to proceed.

5. For Com port properties, configure as follows:

   Baud Rate --> 115200 bps
   Data Bits --> 8
   Parity --> None
   Stop Bits --> 1
   Flow Control --> None

6. In the connection that you have just set up, click **File | Properties**. Select the **[Connect To]** tab. From the **[Connect using]** drop down list, select the correct com port by checking it up at Windows XP's **[Device Manager]** as previously mentioned on page 9 and page 12. Go there by clicking **Start | Control Panel | System | Hardware | Device Manager**.
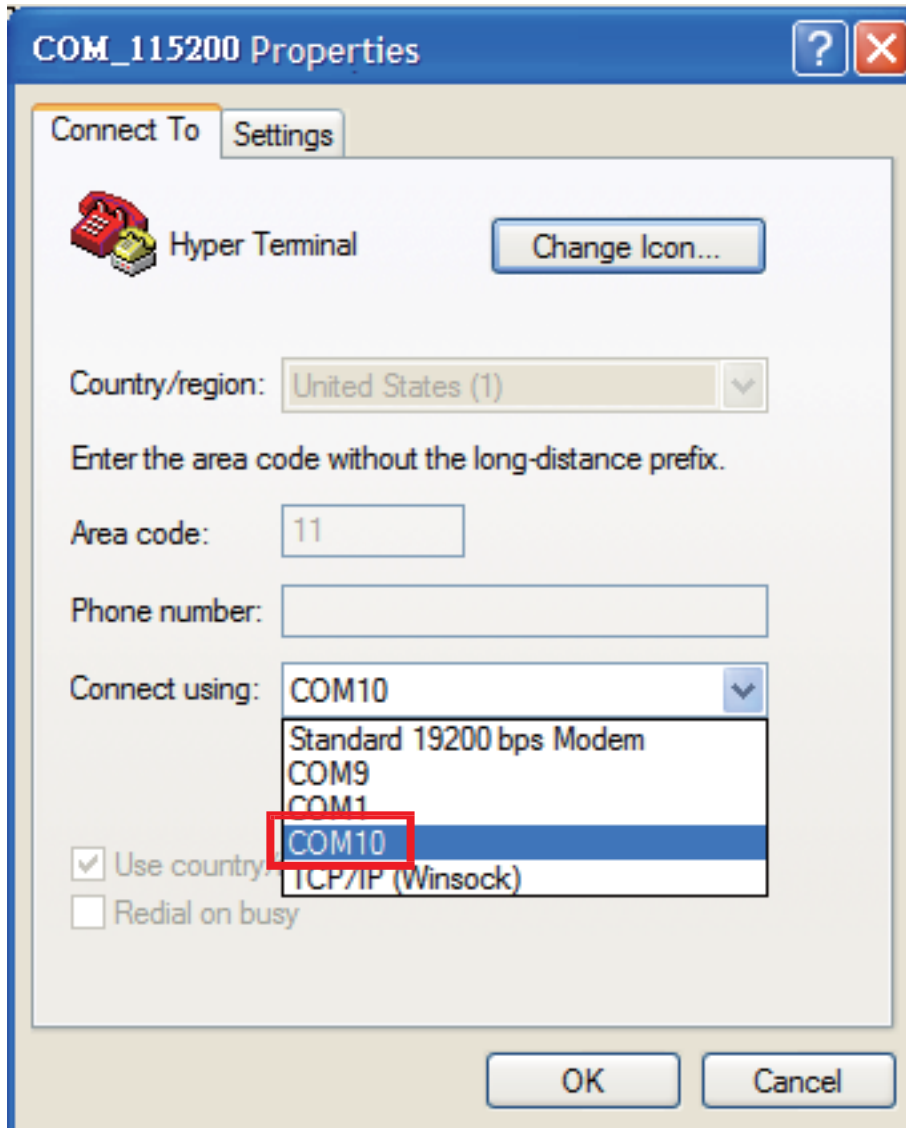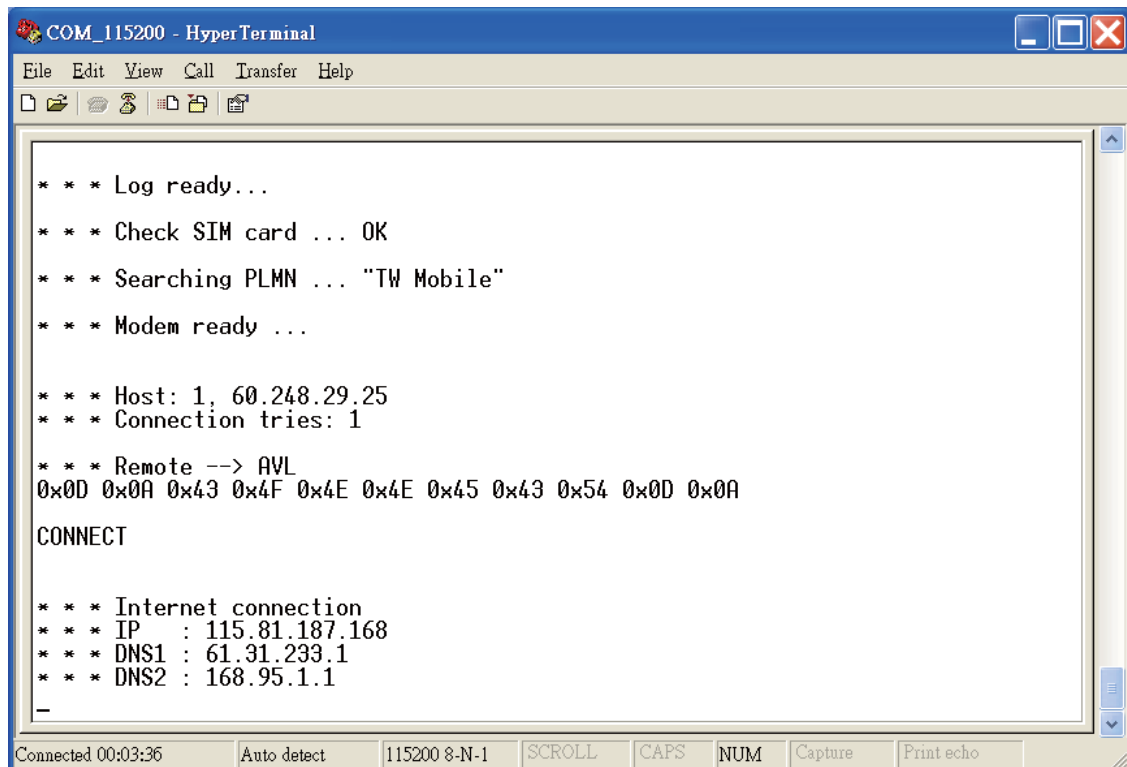
7. In the **File** menu, click **Properties**. Click the **[Settings]** tab. Press the **ASCII Setup** button.
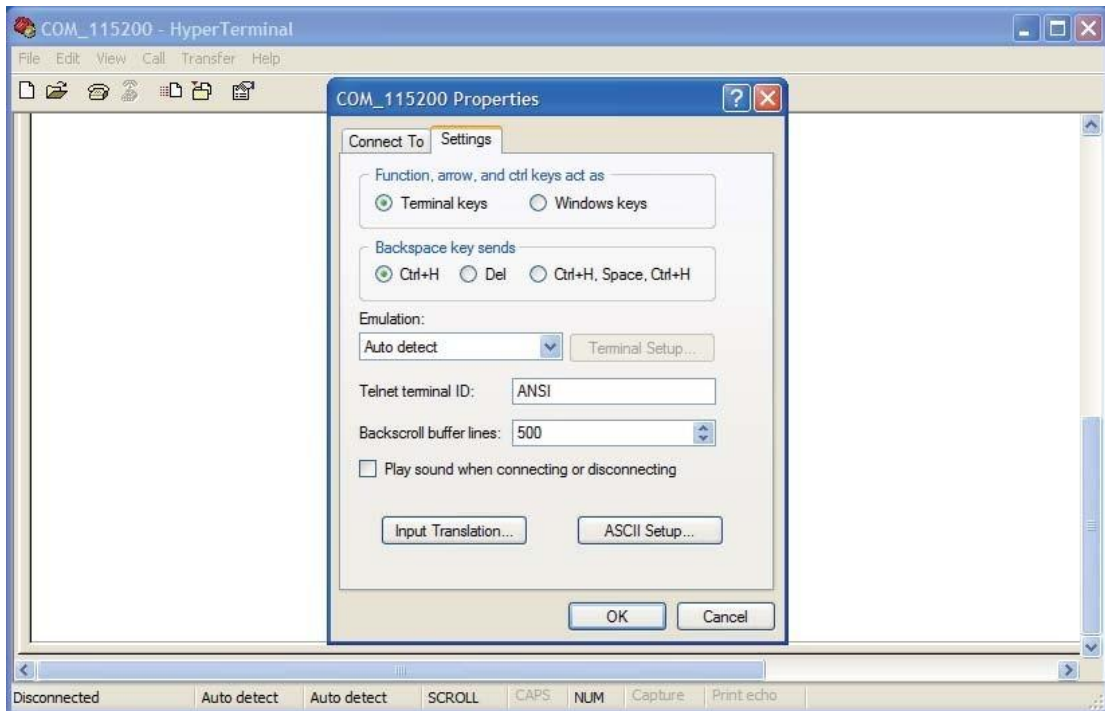
8. In the [**ASCII Sending**] group box. Select both **Send line ends with line feeds** and **Echo typed characters locally**. Press the **OK** button.
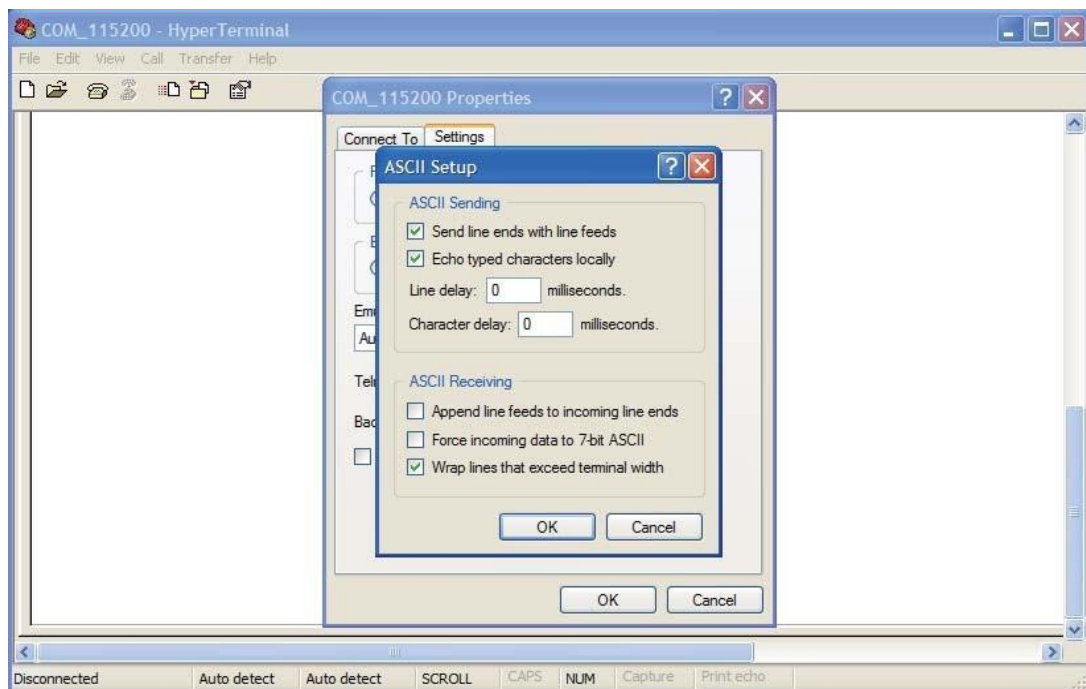
9. Connect your the CAREU UCAN 3G device to power as mentioned in **USB** on page **6.** The device startup message will be displayed.

```
* * * Log ready...

* * * Check SIM card ... OK

* * * Searching PLMN ... "TW Mobile"

* * * Modem ready ...


* * * Host: 1, 60.248.29.25
* * * Connection tries: 1

* * * Remote --> AVL
0x0D 0x0A 0x43 0x4F 0x4E 0x4E 0x45 0x43 0x54 0x0D 0x0A

CONNECT


* * * Internet connection
* * * IP   : 115.81.187.168
* * * DNS1 : 61.31.233.1
* * * DNS2 : 168.95.1.1
_
```
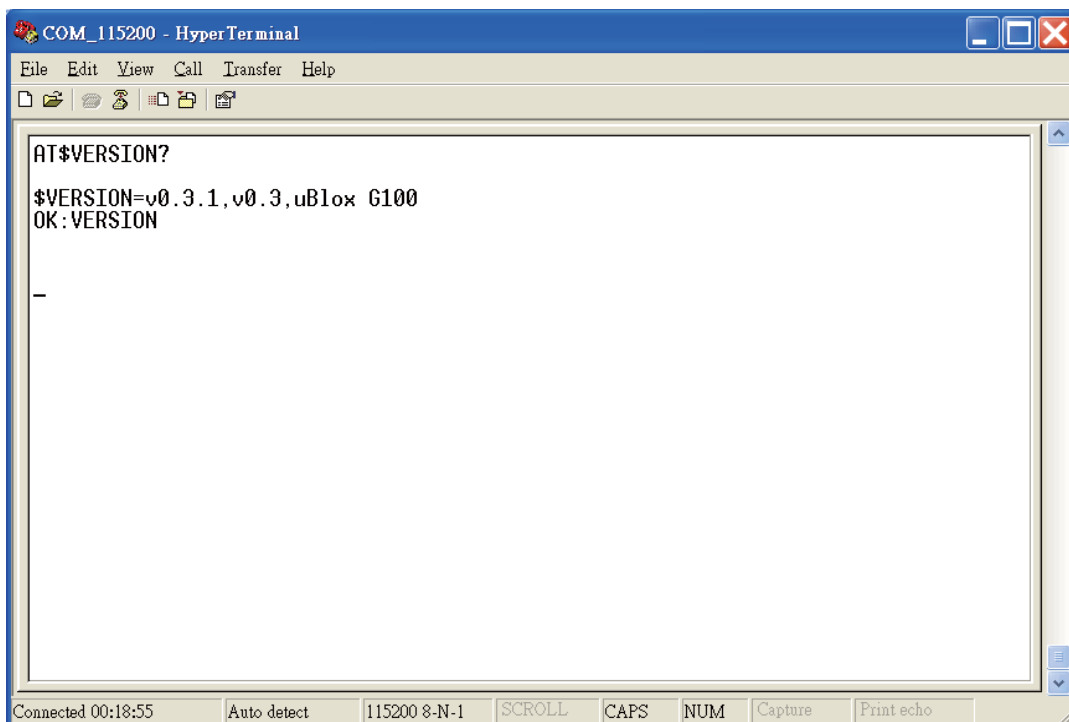
10. In **[HyperTerminal]** window, type in the command "AT$VERSION?" and press the **Enter** key. The hardware and firmware version will show. As long as your **[HyperTerminal]** window appears as the screenshot below, a connection between the device and your system has already been built up and working. It is time to send all configuration commands.

```
AT$VERSION?

$VERSION=v0.3.1,v0.3,uBlox G100
OK:VERSION


_
```

3.4 Communication Settings

The CAREU UCAN 3G Vehicle Tracker communicates with your control center by either SMS or GPRS (TCP/UDP). Before the device is installed into a vehicle, communication parameters should be set.

1. SMS Configuration
   Use AT$SMSDST command to set a SMS control center phone number or short code. For example, if the SMS control center phone number is +886123456789, the AT$SMSDST command to be issued into **HyperTerminal** should be:

   AT$SMSDST=+886123456789

   OK

   Then you can try to use cellular phone or SMS gateway to send a SMS message to the CAREU UCAN 3G device. Send a SMS message --

   >"AT$MODID?" Device will response:

   $MODID=101000001

   OK

   This proves a successful mobile phone SMS connection.

2. GPRS Configuration

   Set GPRS servers by using the folloiwng commands:
   AT$APN=internet,username,password (APN=internet, Username=username, Password=password) OK
   AT$HOSTS=1,0,60.148.19.10,6000

   (Server IP address = 60.148.19.10 and Port number =6000)

   OK

   AT$RETRY=5,10 (Message retry settings)

   OK

   AT$IPTYPE=1 (Using TCP/IP mode)

   OK

   AT$GPRSEN=1 (GPRS enable)

   OK

   AT$HB=60,1 (Heartbeat setting)

   OK

   Please refer to the CAREU UCAN 3G Protocol Document for more command details.

3.5 GPS Tracking Configurations

After the device communication settings are done, the remote GPS tracking is ready to function. The setting of GPS tracking can be done by using AT$PDSR command. For example,
AT$PDSR=1,30,0,0,2,0,0,1,0 (Tracking through GPRS by time interval 30 seconds)
OK

For simple testing GPRS, run the TCP Server U-Series software which is provided by S&T. It is simple server software that can wait for device connection and data.
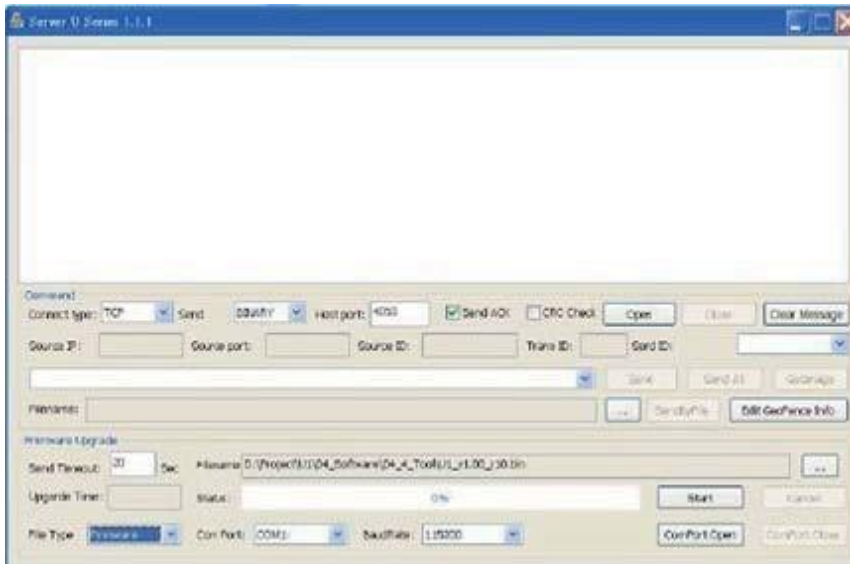
For advanced testing, you need the software Intelli TracerPlus. Please request this software through your sales contact.

You can also apply for a testing account from S&T's FleetWeb solution through your sales contact.

The main page of the Intelli FleetWeb appears as below:

3.6 Firmware Upgrade

The firmware of the CAREU UCAN 3G can only be updated through USB interface. With the firmware loader tool provided by S&T, firmware update can be done for the device. Such firmware loader runs on Windows-based systems. To upgrade the firmware, follow the procedure below

1. Connect the device to your PC with the USB cable.
2. Connect the device to power.
3. Power on the device.
4. Run ServerUSeries.exe. A window displays as follows:

5. Press browse the button [...] to browse to the firmware provided by S&T.
6. Press the **Start** button to run the firmware program.
7. After the writing progresses to 100%, it takes about 20 seconds for the update to completes.
8. Firmware update completes.

Chapter 4   Technical Specification

Characteristics	
Dimensions (L x W x H)	48mm x 66mm x 25mm
Weight	55g
Radio Performance	
Frequency	U260 for NAR Ver. 850/1900MHz
	U270 for EUR Ver. 900/1800/2100MHz
GSM Functionality / GPRS	
GPRS Mode	Multislot Class 10
GSM Antenna	Internal
SIM Interface	SIM Card 1.8V, 3V Supported
GPS Functionality	
Receiver	50 Channels
Sensitivity (Tracking)	-162dBm
Antenna Type	Internal GPS Active Antenna, 3.3V
GPS Protocol	NMEA 0183 (2.3, compatible to 3.0)
Onboard Components	
MCU	32-bit Microcontroller
Data Memory	8MB Flash
Motion Sensor	3-axes Acceleration Sensor

Electrics	
Power Source	DC 8V to 30V
Power Consumption	150mA @ 12V (operating mode) 20mA @ 12V (sleep mode)
Environment	
Temperature	–20 °C to +60 °C (Operating Temperature) –20 °C to +70 °C (Storage Temperature

Note: The specification herein is subject to change without prior notice.

Systems & Technology Corp. (S&T), founded in 1987, is a market leader in Automatic Vehicle Locating (AVL) solutions, Geographical Information Systems (GIS) and navigation. It has formed a professional development team to innovate the most advanced and comprehensive GPS tracking products for the customers and has built a global service network to provide non-stop services and support.

With the well-established marketing networks of over 100 distributors in the world, S&T is your trustworthy tracking solution provider. For more product information, please contact S&T by Email, phone or fax.

Web Site	http://www.systech.com.tw
Email	avl@systech.com.tw
Phone	+886 2 26981599
Fax	+886 2 26981211

Chapter 5. Regulation

Federal Communication Commission Interference Statement

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 equipment 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 radiate 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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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.

Taiwan 警語：**(**此產品含電信終端設備**+**電信管制射頻器材**)**

電磁波警語標示

    (1) 警語內容：「減少電磁波影響，請妥適使用」。

    (2) 標示方式：必須標示於設備本體適當位置及設備外包裝或使用說明書上。

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