CAREU WT1 Vehicle Tracker User Guide

Version: 0.1

Reference No.:

Date: November 20, 2012

SYSTEMS & TECHNOLOGY CORP.

General Information

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Chapter 1. Introduction

Thank you for your purchasing the CAREU WT1 Vehicle Tracker. We are very pleased to introduce you our excellent product, and you will enjoy great benefits by applying such a smart device.

The CAREU WT1 Vehicle Tracker is an all-in-one device that integrates multiple applications of GPS (Global Position System), GSM (Global System for Mobile Communication) and GIS (Geographic Information Systems) with each other.

Designed with the latest GPS technology, the CAREU WT1 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.

1.1 Features

- Cost effective and easy installation
- SMS, GPRS TCP/ UDP, USSD, FTP communications
- Geo-fencing reports
- Remote configuration
- Real-time tracking (time, distance interval or intelligent mode, and heading)
- Intelligent power management
- Power low/lost alarm
- Journey report wireless downloads
- GSM/GPRS simultaneously
- Firmware upgrade over the air (via GPRS from FTP)
- Up data log capacity

1.2   Scope

This document will guides you to start the CAREU WT1 Vehicle Tracker. However, as this document contains basic device configuration only, please see the CAREU WT1 Protocol Document for the advanced information.

1.3   About WT1

The CAREU WT1 Vehicle Tracker transmits the wireless signals such as location, peripheral, and vehicle control data to a control center. The onboard GPS receiver provides users with location data including speed, direction, mileage and altitude. It uses an onboard GSM/ GPRS module to accomplish wireless transmission.

A microcontroller can probe location and command data at regular intervals, derive actions from location, peripheral and control data, and execute such actions.

Among the best features of the CAREU WT1 Vehicle Tracker, in particular, they transmit data in ASCII mode or binary mode.

Peripheral data indicates the status of various peripherals connected to and/or controlled by the device. The peripherals include, but not limited to, door locks/un-locks, starter interrupt, ignition, battery, engine and panic button.

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.

Backup battery and tamper sensing GPS Antennas primarily indicate the loss of Main Power and the interruption of GPS antenna connectivity.

The device supports over-the-air firmware upgrade to deliver additional functionality without physically touching the device once installed.

In consideration of technicality and marketability, the CAREU WT1 has so many excellences to be competitive enough to stand out in the market. With regard to the technicality, the CAREU WT1 saves and records more data even under inactive communication staus, and it also provides better power management, coexistence of GPRS and SMS modes. When it comes to the marketability, the CAREU WT1 users are provided with the convenience that its firmware can be upgraded through mini USB without disassembling the device.

1.4 Hardware Architecture

As hardware is concerned, the CAREU WT1 is comprised of a micro-controller, regulator, GPS receiver, GSM/GPRS modem, G-Force sensor, flash memory data storage, I/Os interface and LED status indicators.
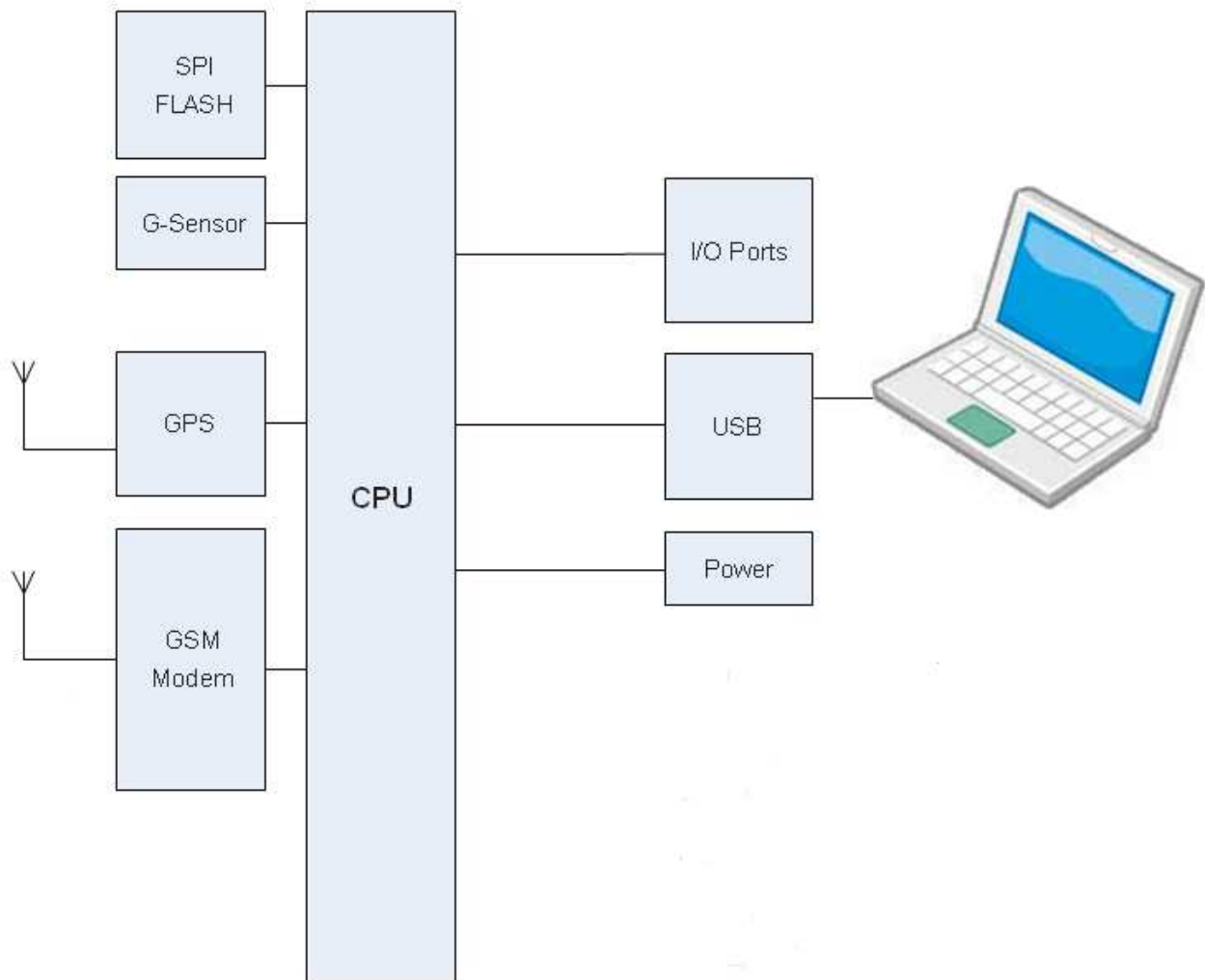
- Users can connect PC's HyperTerminal to the Diagnostic/setting port for the AVL configuration.
- G-Sensor for man down warning.

1.5   Related Document

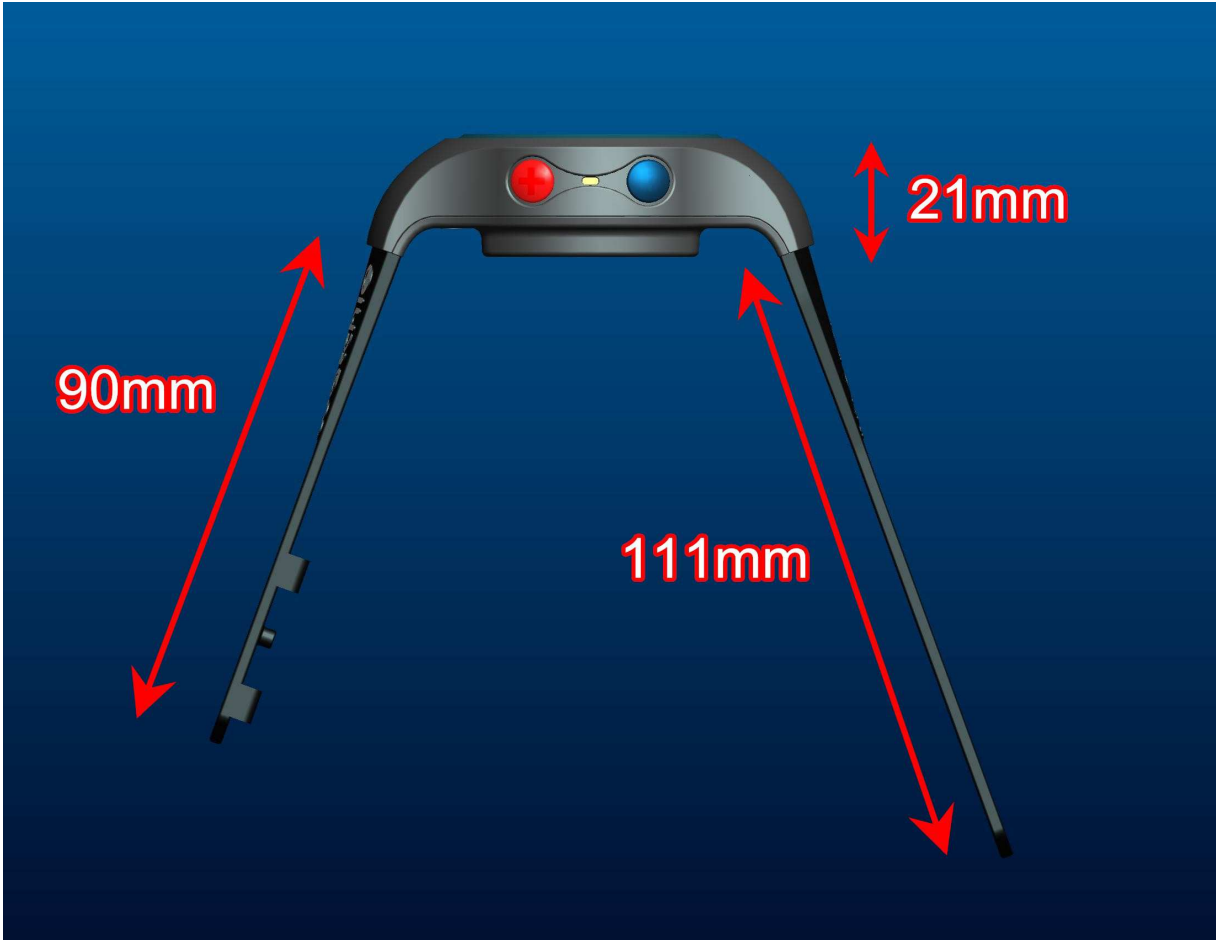[1] CAREU WT1 Protocol Document

Chapter 2. Taking a Tour of CAREU WT1

This chapter will guide you to the major connectors of the WT1 device.
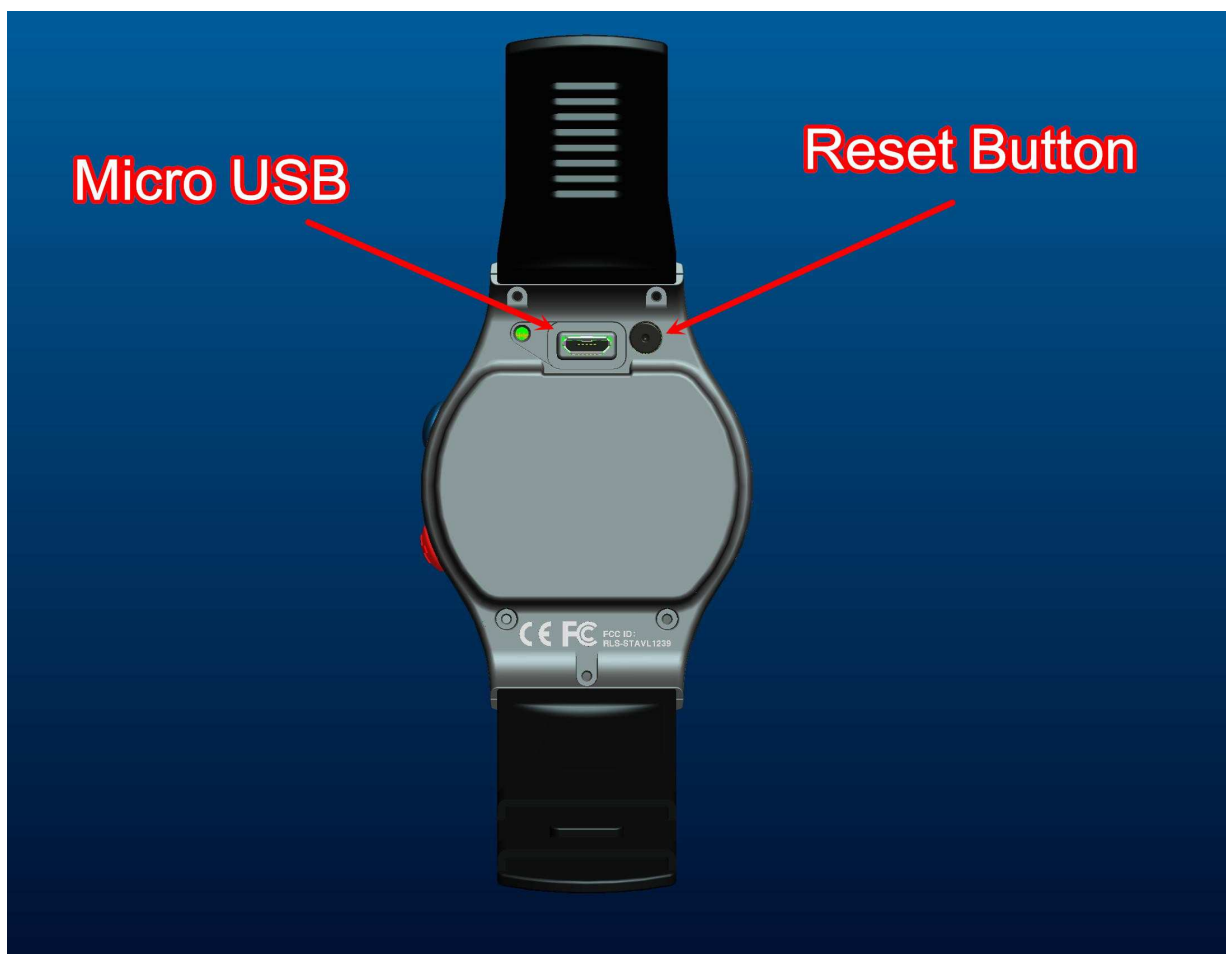
2.1   Dimensions

2.2   Lateral view

No.	Name	Description
Red Button	SOS	SOS Function,User define Message & Action mode
Blue Button	Page	LCD View change key,User define function.

2.3 Front View

No.	Name	Description
Micro USB	USB	USB for change battery & Function set.
Reset Button	Reset	H/W Reset Key.

Chapter 3. Getting Started with CAREU WT1

3.1   USB Device Driver Installation

The CAREU WT1 communicates with your host computer by either RS-232 or USB interface.

In some newer editions of Windows XP, the CAREU WT1 device can be installed as a "virtual COM port" device whereby the CAREU WT1 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 WT1 device. In the following content of this section, you will be guided to how the installation can be done in both cases.

To install the device driver for the CAREU WT1, connect the CAREU WT1 device to your system with an USB cable as mentioned in **Mini USB Cable Connection** on section 3.1.

As soon as the connection is made between the CAREU WT1 and your computer, a balloon appears above the notification area saying an USB device is found.
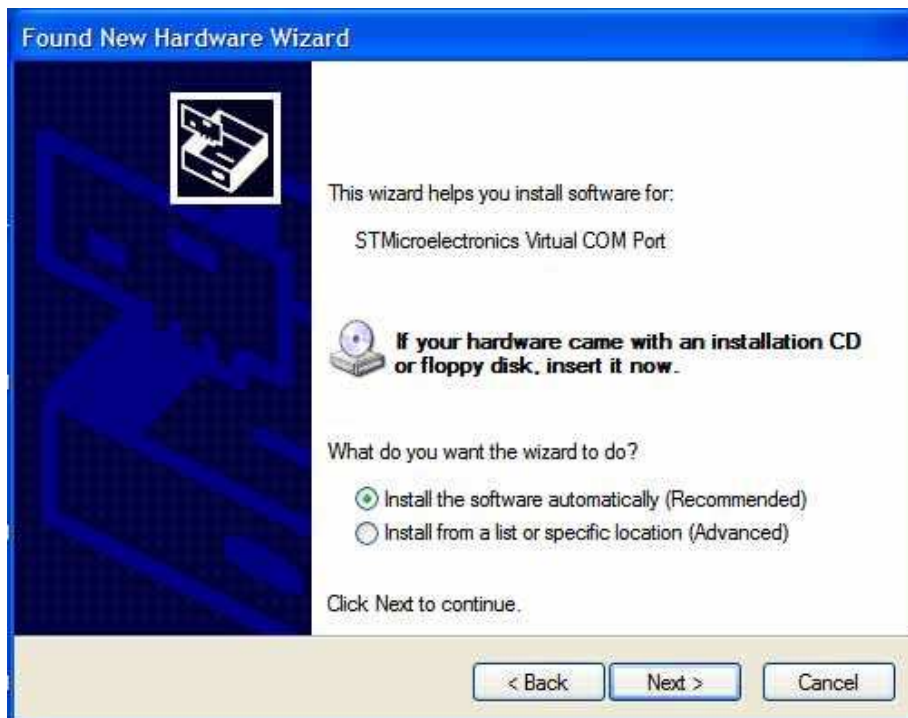

Click on this balloon to start the **[Found New Hardware]** wizard.

Select **No, not this time**. Press the **Next** button to proceed.

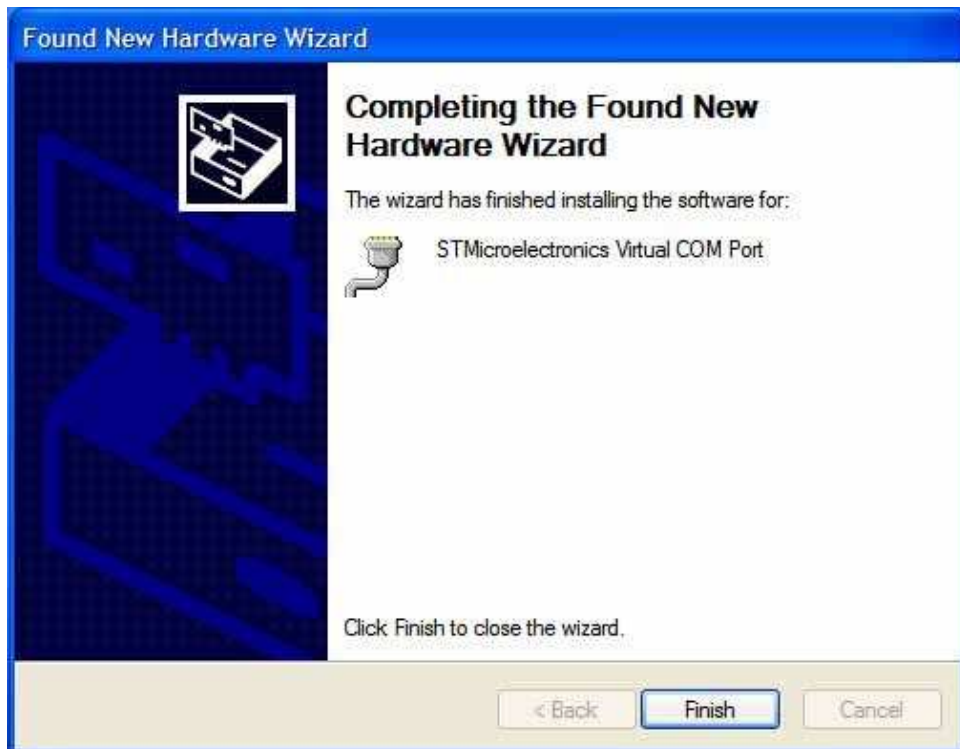1. Automatic Installation

   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.
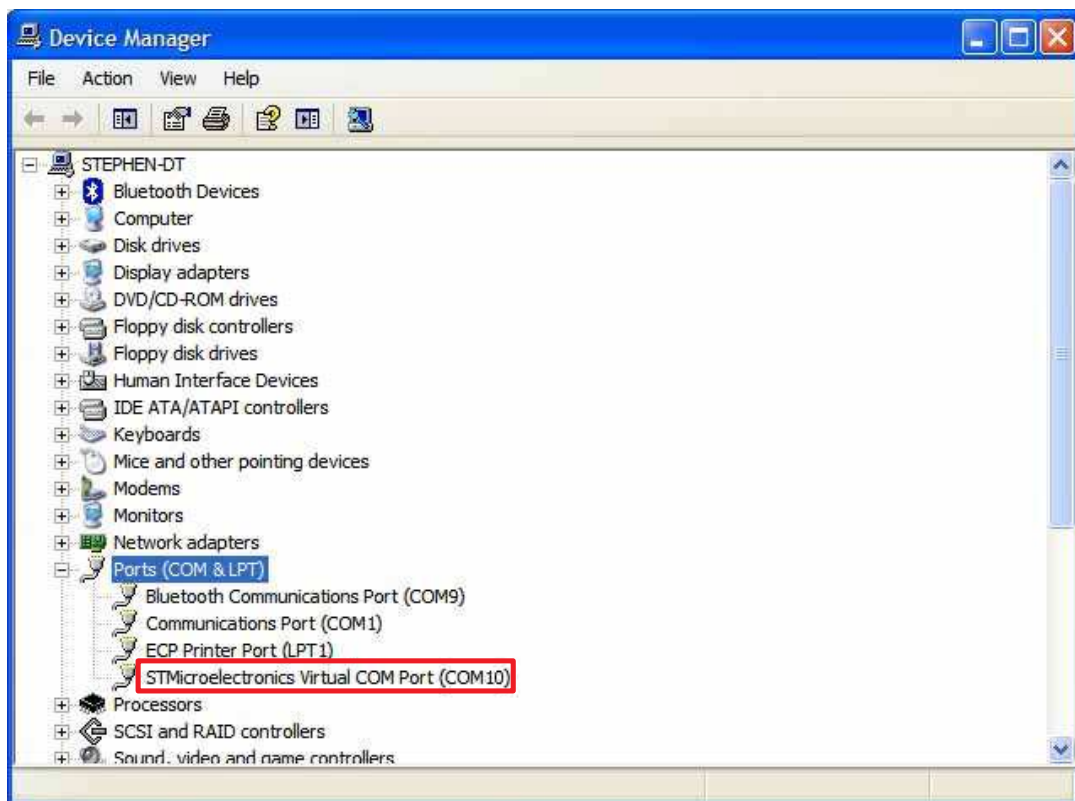

   The wizard proceeds to install the driver.

The installation completes.

In **[Device Manager]**, the CAREU WT1 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 WT1 device driver locates on your local disk.
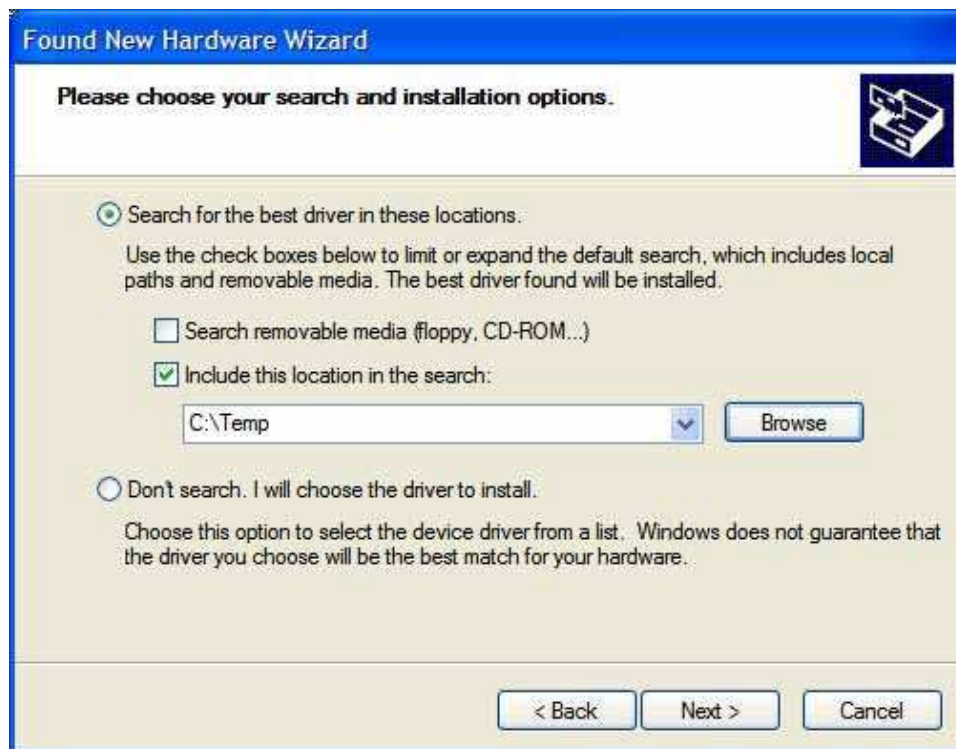
Press the **OK** button.

You can download the USB device driver from http://www.systech.com.tw/downloads.php.
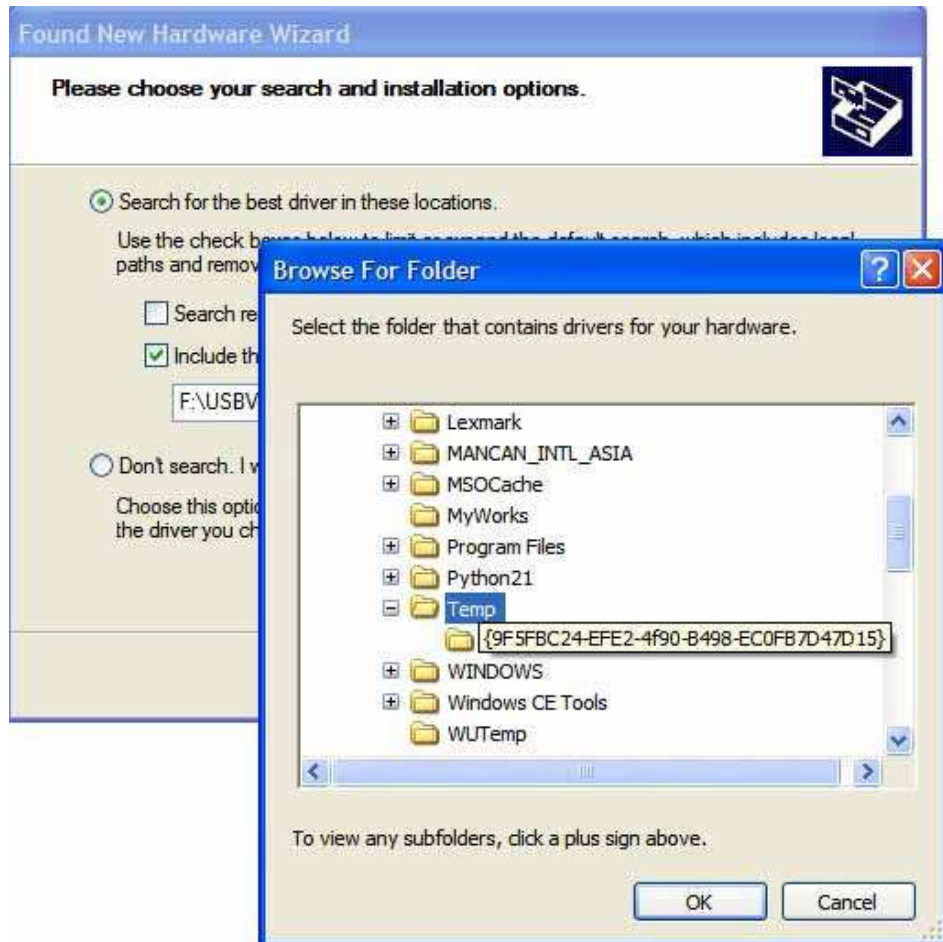
Press the **Next** button to proceed.

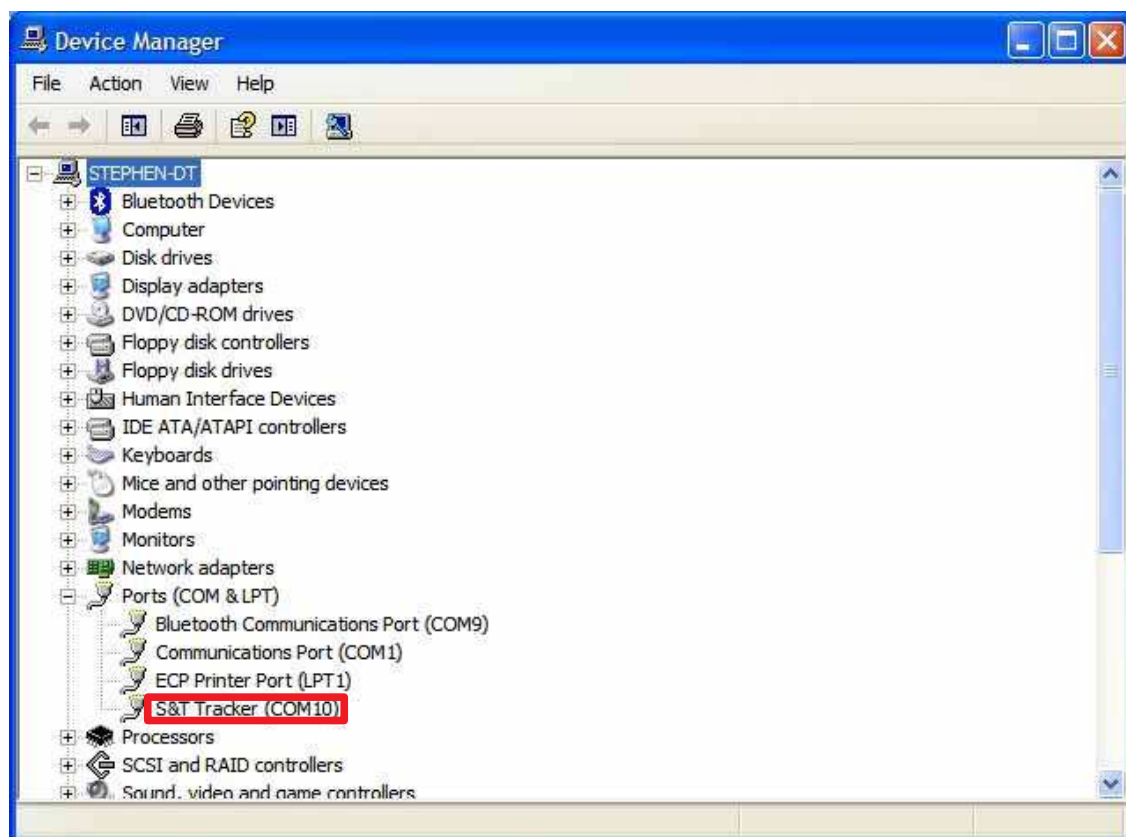The wizard proceeds to install the driver.

The installation completes.

In **[Device Manager]**, the CAREU WT1 device is included under **Ports (COM & LPT)** as "S&T Tracker". COM port number is displayed as well.

3.2 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 the **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 **[DeviceManager]** as previously mentioned on page **21**. Go there by clicking **Start** | **Control Panel** | **System** | **Hardware** | **Device Manager.**
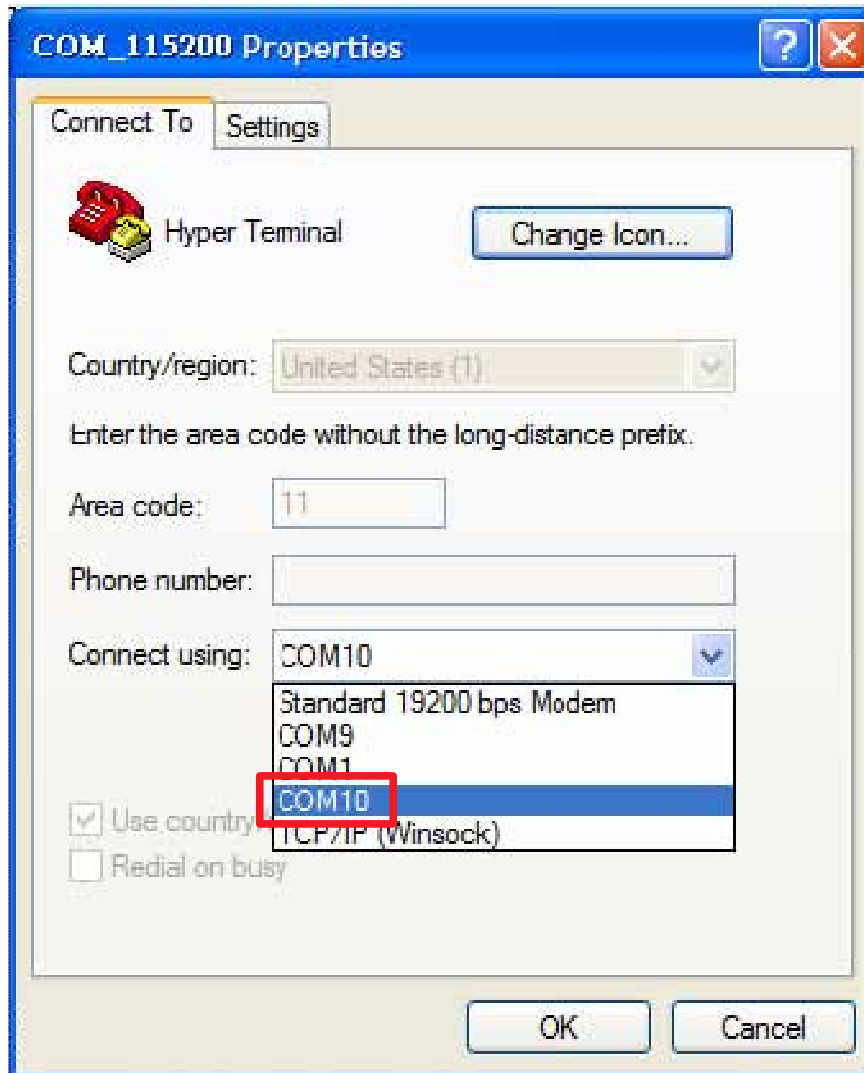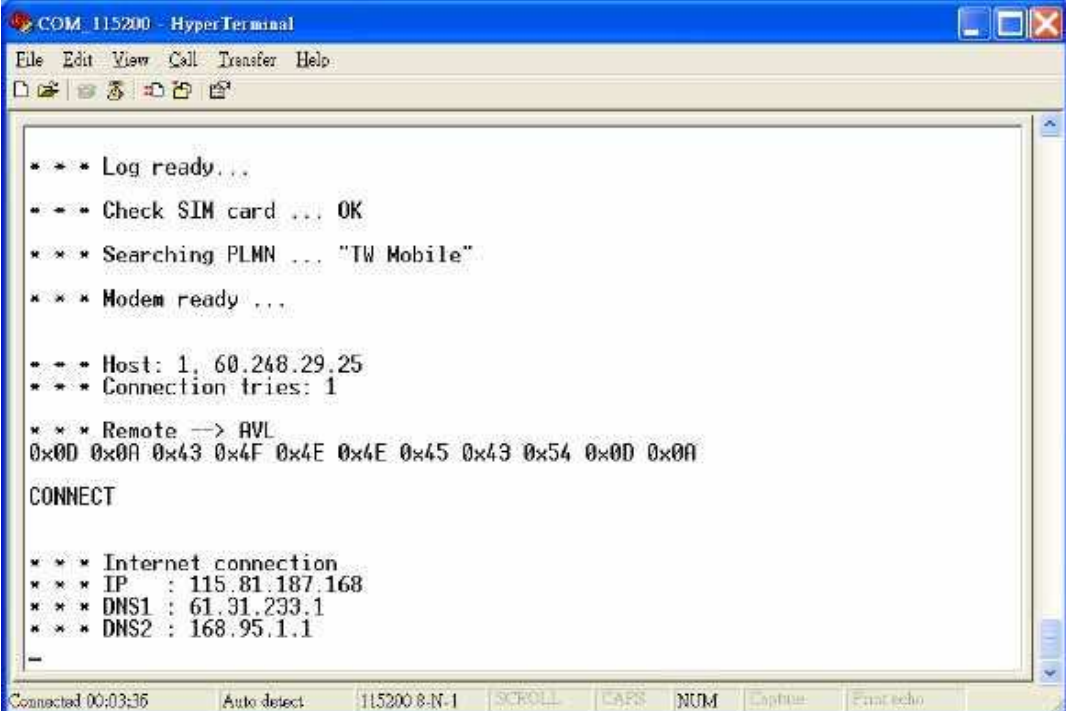
7. In the **File** menu, click **Properties**. Click the **[Settings]** tab. Press the **ASCII Setup** button.
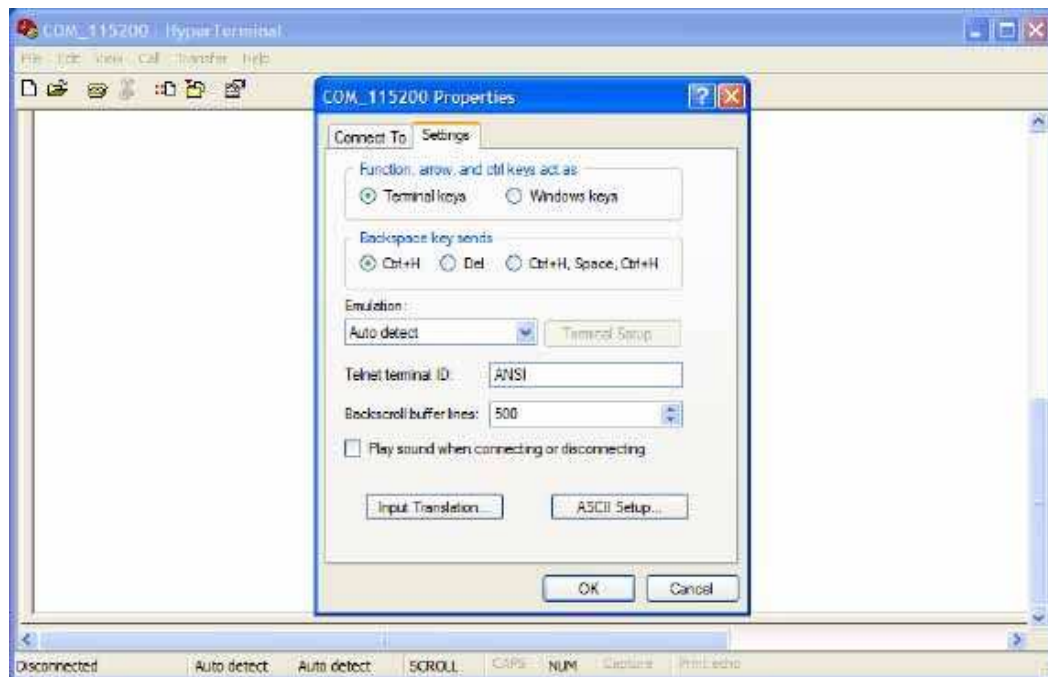
8. In the [**ASCII Sending**] group box. Select both **Send line ends with line feeds** and **Echo typed characters locally**. Press the **OK** button.
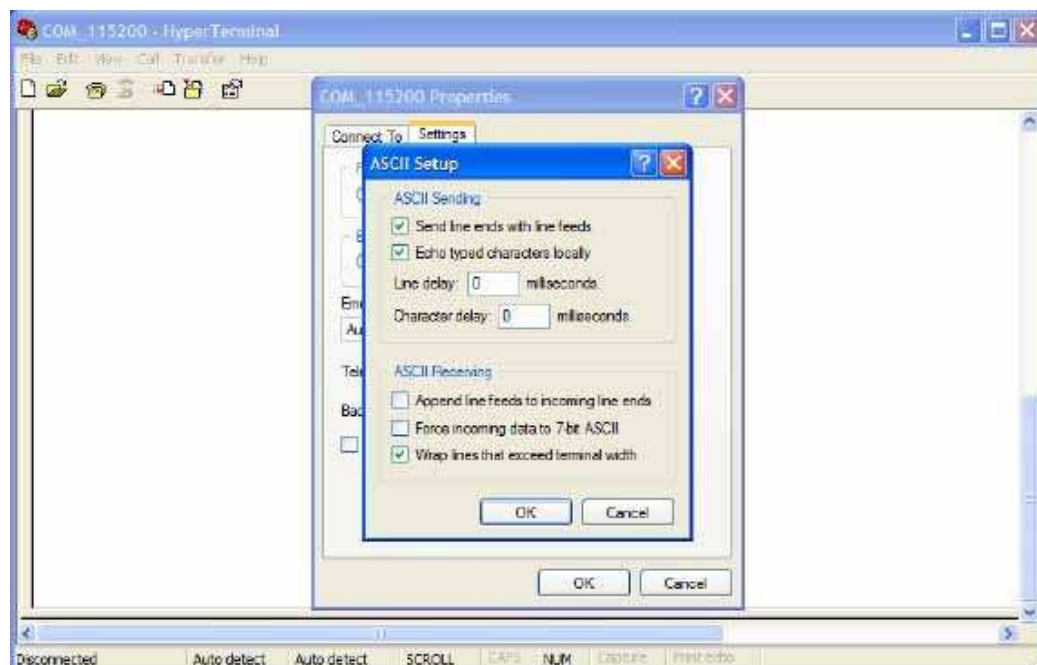
9. Connect your the CAREU WT1 device to power as mentioned in **Power and I/O Cable Connection** on page **12.** The device startup message will be displayed.

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.

3.3   Communication Settings

The CAREU WT1 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 WT1 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 WT1 Protocol Document *for more command details.*

3.3 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=1,30,0,0,2,0,0,1,1 (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.
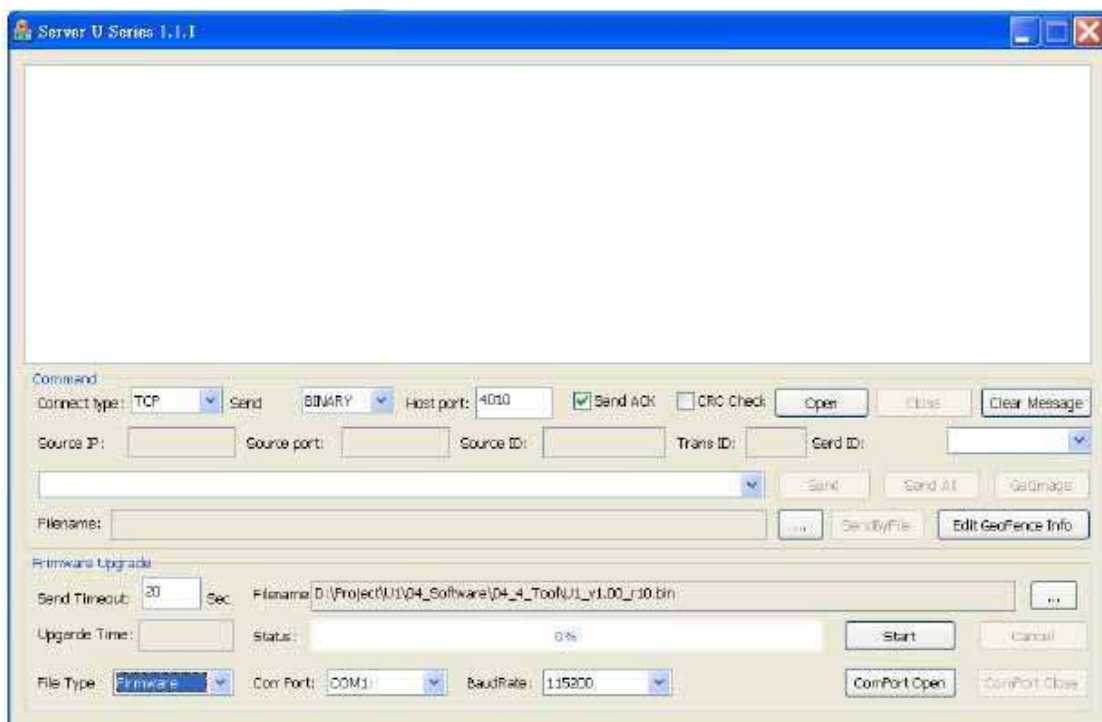
For advanced testing, you need the software Intelli TracerPlus. Please
request this software through your sales contact.

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:

3.4 Firmware Upgrade

The firmware of the CAREU WT1 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:
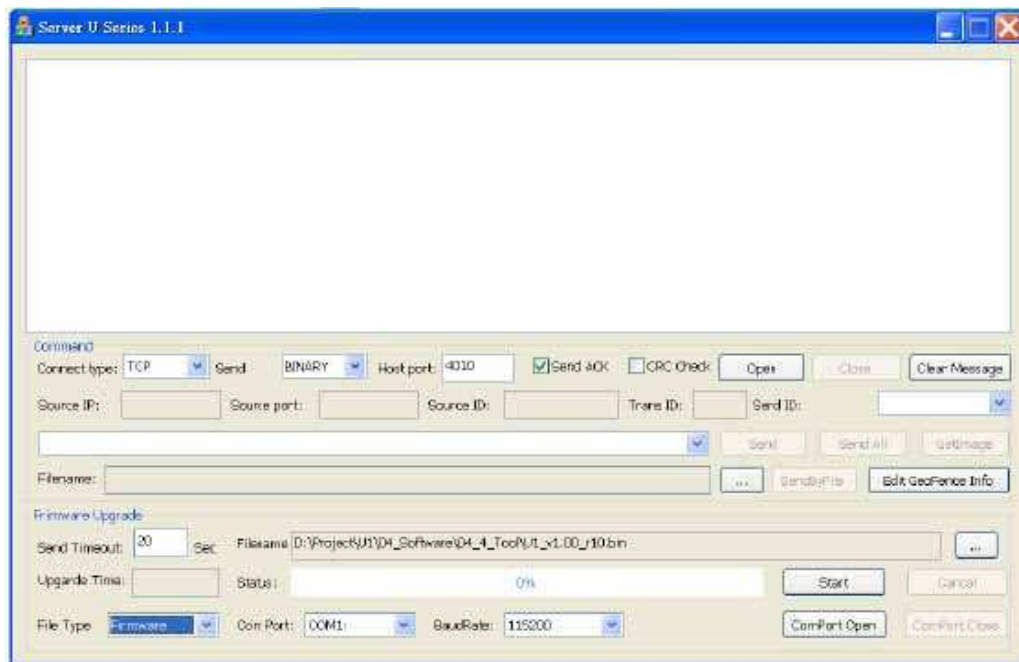
5). Press browse the button [...] to browse to the firmware provided by S&T.

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)	108 x 72 x 31mm
Weight	165g
Radio Performance	
Frequency	Quad-band 850/900/1800/1900MHz
GSM Functionality / GPRS	
GPRS Mode	Multi-slot class 10
GPRS Coding Scheme	CS1,CS2,CS3 and CS4
GSM Antenna	Internal
SIM Interface	E- SIM (Built-in mainboard)
GPS Functionality	
Receiver	50 channels
Sensitivity (Tracking)	-160dBm
Antenna Type	External GPS active antenna, 3.3V
Connector	SMA female
GPS Protocol	NMEA 0183 Ver3.0
Onboard Components	
MCU	32-bit microcontroller
Data Memory	8 MB Flash
Motion Sensor	3-axes acceleration sensor
Led Indicator	GPS and GSM Indicator

Interface I/O	
Button Key	Emergency Button
Controls	Function Button

Electrical	
Power Source	500mA @ +5V

Environment	
Operating Temperature	−20 ℃ to +60 ℃

Battery	
Rechargeable Backup Battery	3.7V / 550mAH

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.

This marking or statement shall include the following or similar text:

**CAUTION
RISK OF EXPLOSION IF BATTERY IS REPLACED
BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING
TO THE INSTRUCTIONS**

Web Site	http://www.systech.com.tw
Email	avl@systech.com.tw
Phone	+886-2-2698-1599
Fax	+886-2-2698-1211

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.

RF Exposure Information (SAR)
This device meets the government's requirements for exposure to radio waves.
This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

The exposure standard for wireless device employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. *Tests for SAR are conducted using standard operating positions accepted by the FCC with the device transmitting at its highest certified power level in all tested frequency bands.

Česky [Czech]	*[Jméno výrobce]* tímto prohlašuje, že tento *[typ zařízení]* je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish]	Undertegnede *[fabrikantens navn]* erklærer herved, at følgende udstyr *[udstyrets typebetegnelse]* overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German]	Hiermit erklärt *[Name des Herstellers]*, dass sich das Gerät *[Gerätetyp]* in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
Eesti [Estonian]	Käesolevaga kinnitab *[tootja nimi = name of manufacturer]* seadme *[seadme tüüp = type of equipment]* vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, *[name of manufacturer]*, declares that this *[type of equipment]* is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]	Por medio de la presente *[nombre del fabricante]* declara que el *[clase de equipo]* cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ *[name of manufacturer]* ΔΗΛΩΝΕΙ ΟΤΙ *[type of equipment]* ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
Français [French]	Par la présente *[nom du fabricant]* déclare que l'appareil *[type d'appareil]* est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian]	Con la presente *[nome del costruttore]* dichiara che questo *[tipo di apparecchio]* è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo *[name of manufacturer / izgatavotāja nosaukums]* deklarē, ka *[type of equipment / iekārtas tips]* atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo *[manufacturer name]* deklaruoja, kad šis *[equipment type]* atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch]	Hierbij verklaart *[naam van de fabrikant]* dat het toestel *[type van toestel]* in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese]	Hawnhekk, *[isem tal-manifattur]*, jiddikjara li dan *[il-mudel tal-prodott]* jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm

	fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian]	Alulírott, *[gyártó neve]* nyilatkozom, hogy a *[... típus]* megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
Polski [Polish]	Niniejszym *[nazwa producenta]* oświadcza, że *[nazwa wyrobu]* jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Portuguê s [Portuguese]	*[Nome do fabricante]* declara que este *[tipo de equipamento]* está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovensko [Slovenian]	*[Ime proizvajalca]* izjavlja, da je ta *[tip opreme]* v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	*[Meno výrobcu]* týmto vyhlasuje, že *[typ zariadenia]* spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish]	*[Valmistaja = manufacturer]* vakuuttaa täten että *[type of equipment = laitteen tyyppimerkintä]* tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska [Swedish]	Härmed intygar *[företag]* att denna *[utrustningstyp]* står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

Statement:

A minimum separation distance of 0 cm must be maintained between the user's body and the device, including the antenna during body-worn operation to comply with the RF exposure requirements in Europe.

DoC 法規版本

Declaration of Conformity

Date: November 20, 2012

Declaration of Conformity

We, SYSTEMS & TECHNOLOGY CORP.;

Address: 18-5F, No.79, Hsin Tai Wu Road, Sec. 1, Hsichih District, New Taipei City, Taiwan, R.O.C.

Declare under our own responsibility that the product:

Model Name: WT1

Intended use: GPS Watch Tracking Device

Complies with the essential requirements of Article 3 of the R&TTE 1999/5/EC Directive, if used for its intended use and that the following standards have been applied:

1. **Health (Article 3.1(a) of the R&TTE Directive)**

   Applied Standard(s):

   ■ EN 62311: 2008

2. **Safety (Article 3.1(a) of the R&TTE Directive)**

   Applied Standard(s):

   ■ EN 60950-1: 2006 + A11: 2009 + A1: 2010 + A12: 2011

3. **Electromagnetic compatibility (Article 3.1 (b) of the R&TTE Directive)**

   Applied Standard(s):

   ■ EN 301 489-1 V1.9.2 / -3 V1.4.1 / -7 V1.3.1

4. **Radio frequency spectrum usage (Article 3.2 of the R&TTE Directive)**

   Applied Standard(s):

   ■ EN 300 440-1 V1.6.1 / -2 V1.4.1

   ■ EN 301 511 V9.0.2

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