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‘Incident Commander Pro’ Radio-Based Automatic Tracking System

Setup of Kenwood Base Radio, GPS-Portable Radios and ‘Incident Commander Pro’ Tracking Software

Overview



‘Incident Commander Pro’s Automatic Tracking System, designed for tracking mobile units on the ‘Incident Commander Pro’ software, has been developed and tested using the following Kenwood GPS radio hardware components:

Kenwood Nexedge NX-800K2	- UHF Mobile Base Radio
Kenwood Nexedge NX-300K2	- UHF Portable Radio
Kenwood Nexedge NX-700K2	- VHF Mobile Base Radio
Kenwood Nexedge NX-200K2	- VHF Portable Radio
Kenwood KMC-38GPS / 47GPS	- GPS-Microphones



Step 1. To connect the Kenwood Mobile base radio serial-port to the computer’s USB port install a USB-to-Serial adaptor cable. e.g. a Trendnet TU-S9 ‘Prolific’ USB-Serial port cable and it’s driver. http://www.trendnet.com/products/proddetail.asp?prod=150_TU-S9&cat=49

At the conclusion of the USB-to-Serial port cable’s driver installation the driver should, *when the cable is plugged in*, be visible in the Windows Device Manager: To confirm that the driver is available and active view the driver in the Windows Device Manager as follows:

1. Connect the USB-to-Serial port cable to a USB port on the computer.

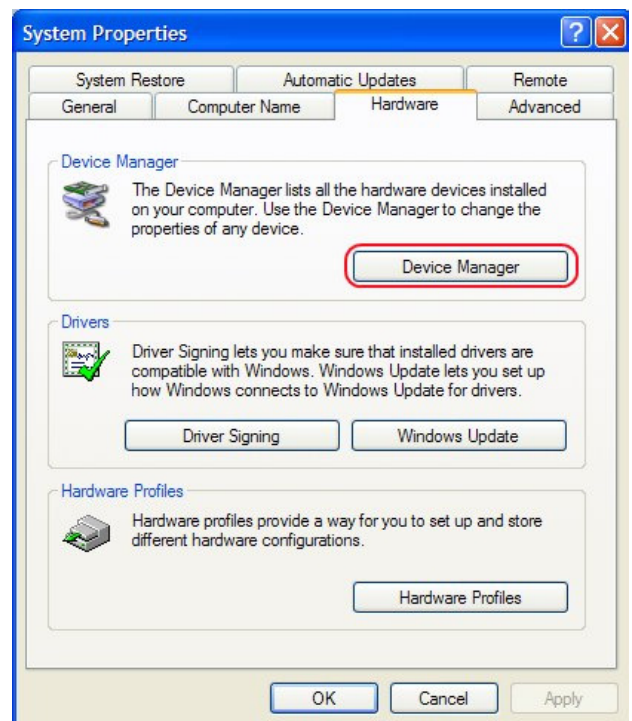
Tip: to avoid changing port settings always use the same physical USB port on the computer.

2. Check that the USB-to-Serial port cable driver has been successfully installed in the Windows operating system:

Start... My Computer... right-click.. Properties
Then select.. Hardware

On the System Properties... Hardware tab
Select Device Manager

The Device Manager will display a list of devices installed on the computer.



If the USB-to-Serial port cable is currently connected to the computer the cable's driver should appear as a listed device under the Device Manager:

Windows7: Other Devices tab.

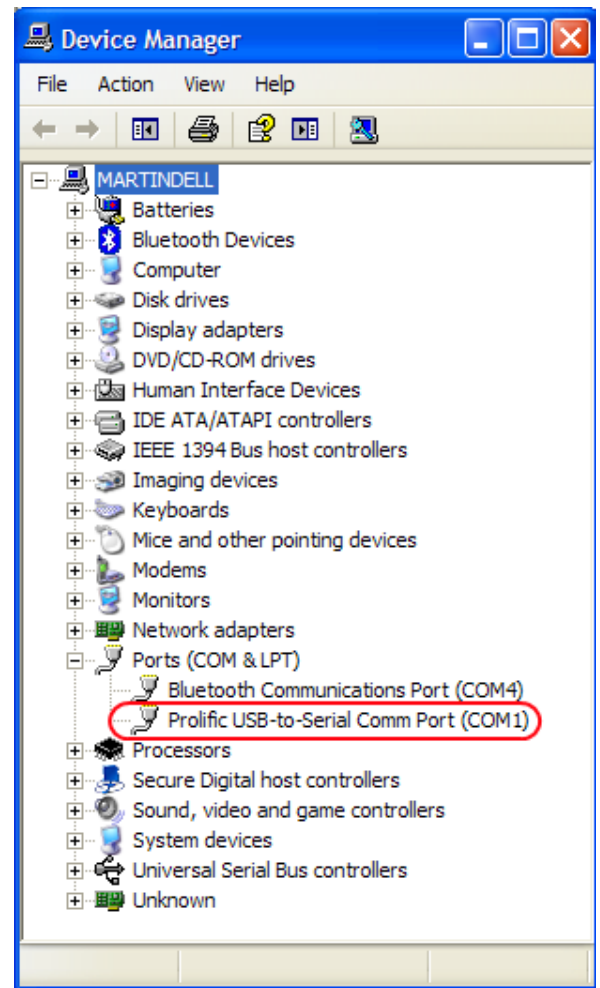
Windows XP: Ports (COM & LPT) tab.

The Trendnet 'Prolific' USB-to-Serial port cable driver is listed as **Prolific USB-to-Serial Comm Port (COM1)**

(or another low COM Port number, if COM 1 has already been used)

Note: If the 'Prolific' USB-to-Serial port cable is not connected to the computer then it's driver will not be listed in the Device Manager.

Note: If the Prolific' USB-to-Serial port driver icon has a yellow question mark beside it you may have to reboot the computer to fully load the driver.



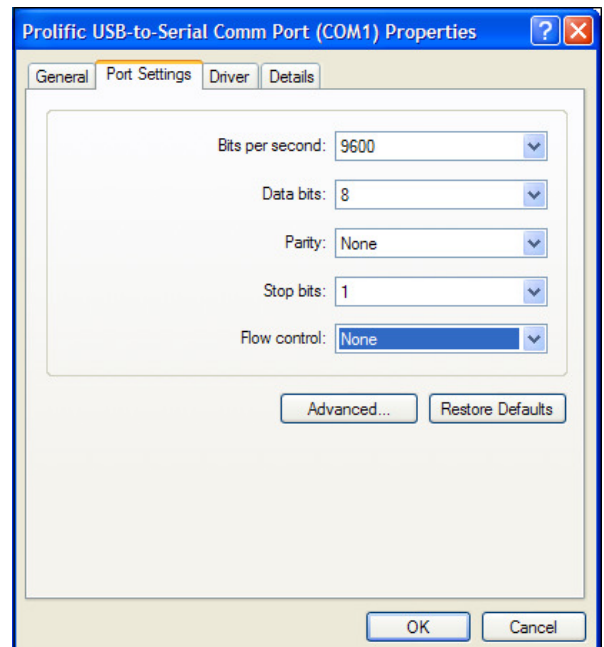
3. Right-click on the USB-to-Serial port driver, click the Port Settings tab and enter the following data transmission values:

Bits per second (Baud Rate): 9600

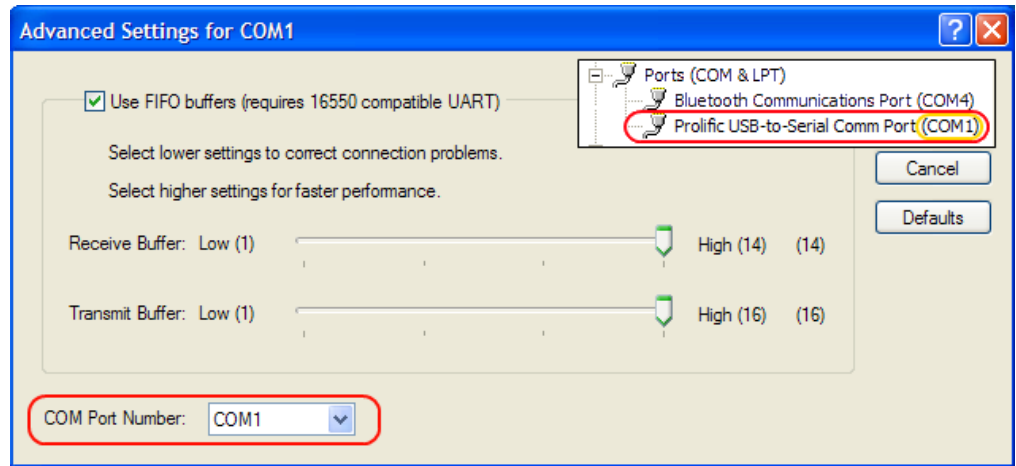
Data bits: 8

Stop bits: 2

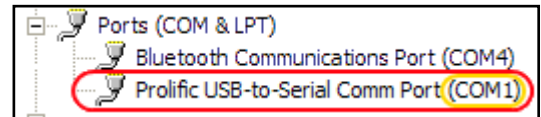
Flow control: None



- Click the Advanced button and choose COM Port Number: COM1 (or another low COM Port number, typically less than 10, if COM1 has already been used) Click OK to save these settings.



- Review the **Prolific USB-to-Serial Comm Port** listing in the Device Manager, which should now show the allocated COM1 port (or the alternate COM Port number chosen) displayed beside the USB-to-Serial port driver name.



The USB-to-Serial Port cable is now configured to send data between the Mobile Base Radio and the 'Incident Commander Pro' software.

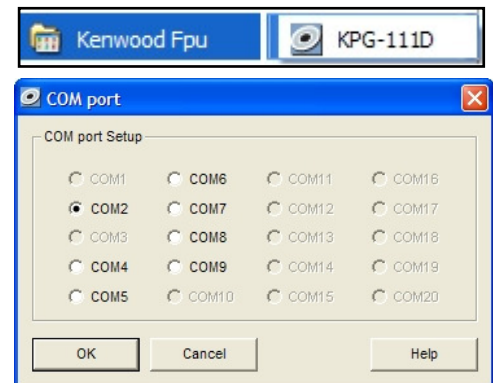
Tip: to avoid having to change the COM port settings always use the same physical USB port on the computer.

Kenwood Radio Programming software installation - Software Installation and Setup Procedure:

Step 2. Download and install the [Kenwood](#) KPG-111D (V2.80) radio programming software. Run **setup.exe** (located in folder KPG-111D\Disk1).

During the installation you will be asked for the Kenwood software license ID. Once this license ID number has been entered you will be able to run the Kenwood radio programming software.

- Check that the mobile radio is connected via the serial-to-USB cable to the computer.
- Run the Kenwood KPG-111D software.
- Click Setup... COM Port... and select an available COM port for communicating with the connected Mobile Base Radio.
- Select **Product Information** and select the Model Name eg: **NX-800/800H (Mobile) K** or **NX-700/700H (Mobile) K**
- Select Frequency eg: **450-520 MHz (UHF)** **136-174 Mhz (VHF)**
- Select Edit... **Zone Information...** and enter radio channel information e.g.



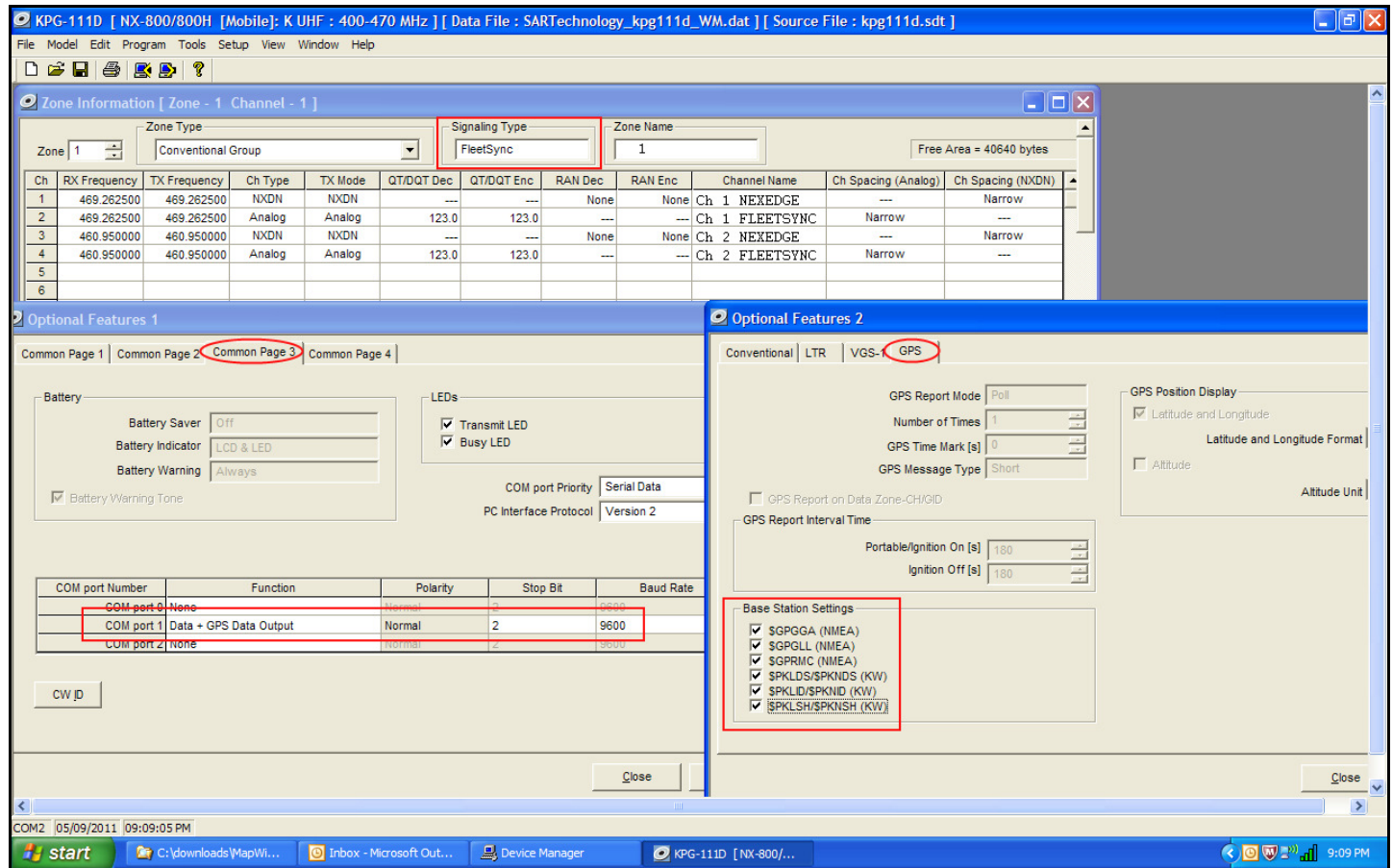
Ch	RX Frequency	TX Frequency	CH Type	TX Mode	Channel Name	Ch Spacing (NXDN)
1	149.495000	149.495000	Analog	analog	CH 1	Narrow

Then set the Signaling Type to **FleetSync** (radio channel information must be entered first). Close the form.

Note: 'Incident Commander Pro' will track Kenwood GPS radios in both 'FleetSync' and 'Nexedge' mode but 'FleetSync' has the additional capability to GPS-identify each portable radio.

7. Select Edit... Optional Features... **Optional Features1... Common Page 3** form and select the: COM Port 1, Data + GPS Data Output, 9600 Baud Rate option.

8. Select Edit... Optional Features... **Optional Features2... GPS** form and check all the Base Station Settings options: \$GPGGA (NMEA), \$GPGLL (NMEA), \$GPRMC (NMEA), **\$PKLDS/PKNDS (FleetSync/Nexedge)**, \$PKLID/\$PKNID (Kenwood), \$PKLSH/\$PKNSH (Kenwood). Close the form.



9... Select Edit.... **Fleetsync... General 1**... Enter Fleet (Own): **100** ID (Own): **1000**
(The Fleet ID) (The mobile radio ID)

10. Click File... Save As...

SARTechnology_KenwoodMobile_NX700K2.dat (VHF) or
SARTechnology_KenwoodMobileNX800K2.dat (UHF) base radio configuration file.

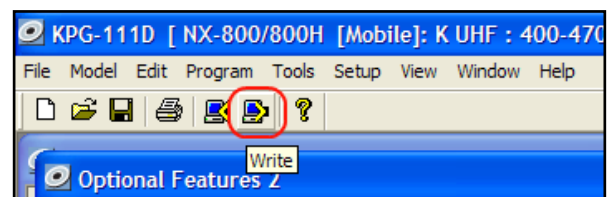
The mobile base radio configuration files:

http://sarotechnology.ca/sarotechnology/SARTechnology_KenwoodMobile_NX700K2.dat.zip (VHF mobile)

http://sarotechnology.ca/sarotechnology/SARTechnology_KenwoodMobileNX800K2.dat.zip (UHF mobile)

are used with the Kenwood KPG-111D V2.80 radio programming software.

11. With an active COM Port selected (in Step2 Setup... COM Port) click the Write button to write these radio configuration settings to the Kenwood Nexedge NX-800K2 (or NX-700K2) mobile base radio.



The Kenwood Nexedge NX-800K2 (UHF) or NX-700K2 (VHF) mobile radio is now configured to communicate, via a connected serial-to-USB cable, GPS radio locations sent on Push to Talk (PTT) from the Kenwood Nexedge NX-300K2 (UHF) or Nexedge NX-200K2 (VHF) portable radios equipped with Kenwood KMC-38/47GPS microphones.

This NMEA-formatted GPS data is sent to the GIS... GPS Tools... GPS Setup... GPS Settings and Connect form in 'Incident Commander Pro' V7.

Step 3. (Optional)

Configure the Kenwood Nexedge NX-200K2 (VHF) and NX-300K2 (UHF) Portable Radios to Auto-Transmit GPS locations.

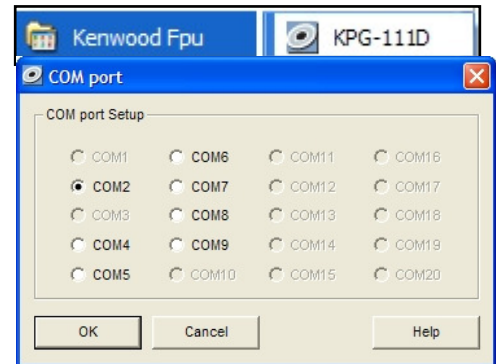
Typically portable radios are configured to transmit their location on pressing the Push To Talk (PTT) button. PTT mode normally uses less battery power than the auto-transmit mode. However setting the portable radios to auto-transmit GPS locations generates multiple, regular tracking locations, providing additional precision, security and an increased probability of obtaining good GPS fixes in marginal conditions. For these reasons auto-transmit i.e. GPS AutoTrack mode, may be preferable for use in critical missions.

1. Connect the portable radio to the computer using the Kenwood USB - multi-pin radio programming cable.

2. Run the Kenwood KPG-111D software.

3. Click Setup... COM Port... and select an available COM port for communicating with the connected IPortable Base Radio.

4. Select **Product Information** and select the mobile Model Name e.g. **NX-700/700H (Mobile) K** or **NX-800/800H (Mobile) K**



eg:

5. Select Edit... **Zone Information...** and set the Signaling Type to **FleetSync**. Close the form.

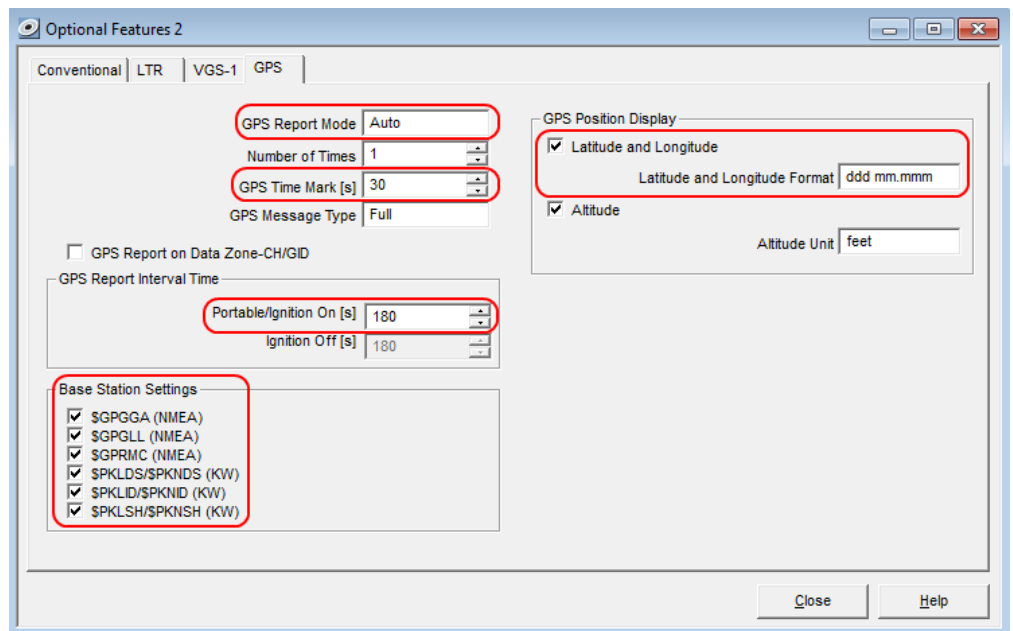
Note: 'Incident Commander Pro' will track Kenwood GPS radios in both 'FleetSync' and 'Nexedge' mode but 'FleetSync' has the additional capability to GPS-identify each portable radio.

6. Select Edit...

Optional Features...

Optional Features2...

GPS form.



Set GPS Report Mode to **Auto**.

Set GPS Time Mark to:

30 seconds.

(This is an offset time to ensure that each portable radio auto-transmits at a different time).

GPS Report Interval Time...

Set Portable/Ignition On to:

180 seconds.

This will set the GPS auto-transmit interval to every 180 seconds (3 minutes).

Check all the Base Station Settings options:

\$GPGGA (NMEA), \$GPGLL (NMEA), \$GPRMC (NMEA), \$PKLDS/PKNDS (FleetSync/Nexedge), \$PKLID/\$PKNID (Kenwood), \$PKLSH/\$PKNSH (Kenwood).

Set GPS Position Display... **Check** Latitude and Longitude.

Set Latitude and Longitude Format to: **ddd.mm.mmm**

Close the form.

7. Click File... Save As...

SARTechnology_KenwoodPortable1_NX200K2.dat (VHF) portable radio configuration file.

or SARTechnology_KenwoodPortableNX300K2.dat (UHF) portable radio configuration file.

The portable radio configuration files may be downloaded from:

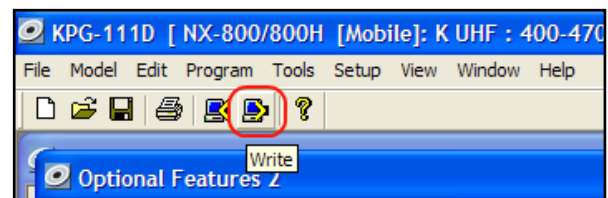
http://sarotechnology.ca/sarotechnology/SARTechnology_KenwoodPortableNX300K2.dat.zip (UHF portable)

http://sarotechnology.ca/sarotechnology/SARTechnology_KenwoodPortable1_NX200K2.dat.zip (VHF portable1)

http://sarotechnology.ca/sarotechnology/SARTechnology_KenwoodPortable2_NX200K2.dat.zip (VHF portable2)

These radio configuration files are used with the Kenwood KPG-111D V2.80 radio programming software.

8. With an active COM Port selected (in Step2 Setup... COM Port) click the Write button to write these radio configuration settings to the Kenwood Nexedge NX-300K2 portable radio.



The Kenwood Nexedge NX-200K2 (VHF) portable is now configured to auto-transmit it's GPS radio locations, at a regular interval, to the NX-700K2 (VHF) mobile base radio.

The Kenwood Nexedge NX-300K2 (UHF) portable is now configured to auto-transmit it's GPS radio locations, at a regular interval, to the NX-800K2 (UHF) mobile base radio.

This NMEA-formatted GPS data is then sent from the receiving mobile base radio, via the serial-to-USB cable, to the computer running 'Incident Commander Pro' V7, GIS... GPS Tools... GPS Setup... GPS Settings and Connect form.

Note: Kenwood FleetSync... General 1 tab

FleetSync Fleet (Own) Number ('Incident Commander Pro' GPS-table **Group ID**) range: **100** to 349

FleetSync ID (Own) Number ('Incident Commander Pro' GPS-table **GPS Unit ID**) range: 1000 to 4999

Tip: To maintain the GPS connection - Turn off all the computer power-saving and sleep-mode functions before starting GPS tracking.

Note: The Kenwood programming software is only used to originally configure the mobile (Step 2.) and portable radios (Step 3.) for GPS tracking. This programming software is not required on the radio-connected computer running 'Incident Commander Pro' GPS tracking.

Only the Serial-USB cable driver (Step 1.) is required on the radio-connected GPS tracking computer.
