

TT8750 Users Guide: TT8750AN002

SkyPatrol TT8750 Users Guide

Revision 1.00

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General

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Regulatory Compliance

FCC

The modem was tested and certified to meet FCC Parts 15 in a stand-alone configuration, which demonstrated that the SkyPatrol TT8750 complies with Part 15 emission limits. FCC Part 22 & Part 24 is covered by the Enfora Enabler IIIG "modular approval" process for a transmitter. This approach, described by FCC Public Notice DA 00-131407 released June 26, 2000, is intended to afford relief to equipment manufacturers by eliminating the requirement for obtaining a new equipment authorization for the same transmitter when installed in a new device.

In order to use the SkyPatrol TT8750 without additional FCC certification approvals, the installation must meet the following conditions:

For the transmitter to meet the MPE categorical exclusion requirements of 2.1091, the ERP must be less than 1.5 watts for personnel separation distance of at least 20 cm (7.9 in). Therefore, the maximum antenna gain cannot exceed +3.3dBi. If greater than 1.5 watts exists, then additional testing and FCC approval is required.

R&TTE - CE

The SkyPatrol TT8750 modem has been fully tested and complies with all the requirements of EN301 489-1, EN301 489-7 and EN60950-1:2002. Compliance to EN301 511 has been demonstrated by testing on both the GSM2338 and the integrated GSM0308 module.

Disclaimer

The information and instructions contained within this publication comply with all FCC, GCF, PTCRB, R&TTE, IMEI and other applicable codes that are in effect at the time of publication. SkyPatrol disclaims all responsibility for any act or omissions, or for breach of law, code or regulation, including local or state codes, performed by a third party.

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In some instances, the product may also be covered by another limited warranty contained in a separate written agreement between SkyPatrol and the distributor or reseller, if any, from whom purchaser purchased the product. That other

limited warranty may provide, for example, a longer warranty period or a different product return procedure that may also be available to purchaser.

This limited warranty shall be governed by the laws of the State of Texas, United States of America, without regard to conflict of laws principles. This limited warranty shall not be governed in any respect by the United Nations Convention on Contracts for the International Sale of Goods.

Table of Contents

1. Objective 1
2. Equipment Needed 1
3. References 1
4. Configuration Recommendation 2
5. Product Specifications 3
6. Procedures 4
   6.1. SkyPatrol TT8750 Panel Descriptions 4
7. Battery Specifications 5
8. Installation 6
   8.1. Mounting Dimensions 6
   8.2. Installing Cables 7
9. Eight (8) Pin Connector 7
10. GPIO Table 8
11. SkyPatrol TT8750 Cables and Connections 10
   11.1. SkyPatrol TT8750 Serial Adapter (Optional) 10
   11.2. Preparing the Power and Serial Communications Cable 12
   11.3. Preparing a Power-Only Cable 13
   11.4. Connecting the GSM/GPRS Antenna 14
   11.5. Connecting the GPS Antenna 15
   11.6. Inserting the SIM and Applying Power 16
   Insert the SIM per the Following Procedure: 16
   Install the power cable as described in the following procedure: 17
12. Connecting the Power Source 18
   12.1. LED Operation 19
13. Configure the Computer and Verify Correct Communications 20
14. Configure the SkyPatrol TT8750 to Communicate with the SkyPatrol Server 25
15. Verifying Server Connectivity 31
16. Verify GPS Operation 34
17. Additional Software Features 36

Table of Figures

Figure 1 – SkyPatrol TT8750 Front View 4
Figure 2 – SkyPatrol TT8750 Rear View 4
Figure 3 - Mounting dimensions of a SkyPatrol TT8750 6
Figure 4 - I/O Connector 9
Figure 5 - 8-Pin Connection 10
Figure 6 – Wiring Schematic 12
Figure 7 – Power-Only Cable Schematic 13
Figure 8 – GSM/GPRS Antenna 14
Figure 9 – GPS Antenna 15
Figure 10 – SIM Slot and SIM Lock 16
Figure 11 – Power Cable 17

1. Objective

The objective of this document is to provide the user with basic information on how to configure the SkyPatrol TT8750 and verify communication with UDPAPI test server.

2. Equipment Needed

In this example the requirements are:

- SkyPatrol TT8750
- SkyPatrol Serial / Power cable Part number CBL048
- Power supply, 12 VDC, 2A
- FAKRA Bordeaux Violet Coding D Antenna Connector for GSM
- FAKRA Blue Coding C Antenna Connector for 3.3 VDC GPS
- Computer with one available Serial port or USB-to-serial converter
- GSM/GPRS SIM with GPRS data enabled.
- An APN (Access Point Name).
- Username and Password, if GPRS is operating on a non-transparent network.

Note: *If you don't know the name of the APN you need to use, please contact your cellular network carrier for that information. Once you have acquired this information, please complete* ***Application Note GSM0000AN019 – GSM Network Configuration Worksheet*** *and keep this worksheet for future reference.*

3. References

- GSM2338AT001 - Spider MT-Gμ AT Command Set
- GSM0000AN019 – GSM Network Configuration Worksheet
- GSM2000CB001 - Mobile Tracker Event Cookbook

4. Configuration Recommendation

The SkyPatrol Mobile Tracker family of products is designed with features to support a robust connection with the network. However, there can be conditions when the connection to the network or the ability to transfer data across the network is beyond the control of the device alone.

For installations that require maximum connectivity, we strongly recommend implementing choices 1 OR 2 AND 4:

i. Insure that the ignition wire is connected to a switched ignition source.

ii. Configure AT$HBRST for a short reset time cycle, suggested value is 4 hours. The default value for AT$HBRST is 24.

iii. Use the PING option of the AT-Command AT$NETMON, to verify end to end connectivity.

iv. Use type 41 (ACKED) messages instead of type 40 UDP messages, to verify end-to-end connectivity.

Using option 4 will increase the data rates of the end user because of the transmission retries. The ACK message is 4 bytes plus the IP header plus the Ethernet frame, which is a total of 62 bytes.

5. Product Specifications

System Requirements

L x W x H:	86.6 x 63 x 25.6 mm (Excluding connectors)
Housing:	Plastic
TX Power:	Class 4 (2W @850/900 MHz) Class 1 (1W @1800/1900 MHz)
Slot Class:	MS10(4RX/2TX, 5 MAX)

Band Operation

GSM2338 (850/900/1800/1900)

GPRS Packet Data

Mode:	Class B, Multislot 10 Certified
Protocol:	GPRS Release 97, SMG 31
Coding Schemes:	CS1 – CS4
Packet Channel:	PBCCH/PCCCH

GSM Functionality

Voice:	Full Rate, Enhanced full rate and half rate, AMR (GSM2338)
CS Data:	Asynchronous, transparent and non transparent up to 9.6 KB
GSM SMS:	Text, PDU, MO/MT, Cell broadcast

Certification (Pending)

GSM2338
FCC: Parts 15, 22, & 24
GCF: 2.21.1
PTCRB: 3.7.1
Industry Canada
CE Mark
Emark
RoHS Compliant

GPS Functionality

- FAKRA Blue Coding C Antenna Connector for GPS
- Supports 3.3V Active Antenna
- GPS Protocols: NMEA, SkyPatrol binary
- Stored GPS Messages Feature

Application Interface

- Host Protocols: PPP, AT, UDP, TCP/IP
- Internal Protocols: UDP (PAD), TCP(PAD)
- API Control/Status: AT or UDP(PAD), CMUX
- Friend's IP Feature
- Auto-Registration software upon power-up
- Over the air commands for:

- I/O Control	- Status Change Reporting
- GPS TX Interval	- GPS Content
- Binary Reporting	- Event Reporting
- Timed Reporting	- Distance Reporting
- Alarm Reporting	- Geo-Fencing
- Max Speed	- Virtual Odometer

SIM Card / Interface / I/O

- FAKRA Blue Coding C Antenna Connector for 3.3 Vdc GPS
- External SIM accessible via end cap
- 2.5mm Audio connection/1 Audio Input/Output
- FAKRA Bordeaux Violet Coding D Antenna Connector for GSM
- 3 Pin I/O – 2 Input/Outputs, 1 Output
  3 LED Status indicators
  1 Ignition Sense

Environment

Operating:	-30°C to +70°C
Spec. Compliant:	-20°C to +60°C
Storage:	-40°C to +85°C
Humidity:	Up to 95% non-condensing
Note:	If the SkyPatrol TT8750 is equipped with a battery, the battery should only be charged between 0 and 45 degrees Celsius

Status Indicator

- Power ON/GPS Power
- Registration Status/User Defined 1
- GPS Status

Power

DC Voltage: 7 - 40 VDC

SkyPatrol TT8750 2338 BAND	**MODE**	**@ 13.8V (mA)**	**Avg Peak (A) @ (dBM)**
GSM 850& 900	1TX/1RX	390	0.600 @ 32.5
	1RX	180	
	Idle	65	
GSM 1800& 1900	1TX/1RX	400	0.570 @ 30.0
	1RX	190	
	Idle	55	

Part Number

GSM2338 –01	SkyPatrol TT8750 without battery
GSM2338-00	SkyPatrol TT8750 with battery

6. Procedures

6.1. SkyPatrol TT8750 Panel Descriptions

1. Front View



Figure 1 – SkyPatrol TT8750 Front View

2. Rear View



Figure 2 – SkyPatrol TT8750 Rear View

7. Battery Specifications

The SkyPatrol TT8750 uses power either from the vehicle battery, or from an optional internal battery.

The battery specifications are as follows:

Nominal voltage:	3.6 VDC
Nominal Capacity:	230 mAH when discharged at 46mA to 2.5V
Maximum and Normal Charge voltage	4.2 V
Minimum discharge voltage:	2.5V
Charge current:	100mA

The features of the battery include µthe following:

- Overload protection
- Temperature sensing (will disconnect charging if out of temp range, 0 to 45 degrees C)
- Battery identification (prevents user from trying to power the unit with an unauthorized battery, or charge an unauthorized battery)

8. Installation

Instructions provided in this section describe the hardware installation of the SkyPatrol TT8750 device. To install the SkyPatrol TT8750 in a vehicle, follow these steps:

- Choose a convenient location in the vehicle – either in the trunk or interior of a vehicle. Avoid locations that might expose the device to excessive heat or moisture.
- Hold the SkyPatrol TT8750 in place and mark the location for mounting screw holes
- Using the markings as a guide, drill mounting holes in those positions
- Align the SkyPatrol TT8750 in the drilled holes and secure it with mounting screws

The SkyPatrol TT8750 is **NOT** a waterproof or sealed device. Care must be taken to ensure the device is kept away from water or any other liquids.

8.1. Mounting Dimensions

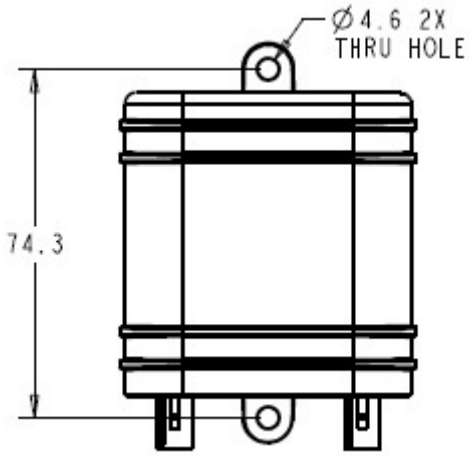


Figure 3 - Mounting dimensions of a SkyPatrol TT8750

It is possible to mount the SkyPatrol TT8750 using either screws, or the plastic mounting rails with tie-downs.

8.2. Installing Cables

During installation, the following precautions will help ensure proper operation of the SkyPatrol TT8750

- Remove power from the SkyPatrol TT8750.
- Do not create loops, sharp bends or crimps in the cables
- All cables should be attached to the vehicle and equipment in such a way to reduce stress or wear caused by vibration generated by moving vehicles.
- Use proper terminations on all power cables

9. Eight (8) Pin Connector

The user can purchase the optional eight (8) pin external I/O connector for the SkyPatrol TT8750 that can be used to interface with other devices. SkyPatrol can provide an optional cable and connector (Part #CBL047). The user also has the option of building his/her own cable. Table 1 describes the pin functionality for this 8 pin I/O connector. Pins that are not planned for usage can be left open without anything connected to them.

Pin Number	Functionality
Pin – 1	Switched Power (Ignition)
Pin – 2	Serial Data In (RS232)
Pin – 3	Serial Data Out (RS232)
Pin – 4	Ground
Pin – 5	Unswitched Power (Battery)
Pin – 6	User Controlled I/O
Pin – 7	User Controlled I/O
Pin – 8	User Controlled Output

Table 1 - 8 pin I/O Connector Interface

10. GPIO Table

Signal Name	Direction	AT-Command	Notes
GPIO - 1	IN/OUT	AT$IOGP1	General purpose I/O pin. As an input, capable of being a programmable pullup/pulldown system using AT$IOPULUP.
GPIO - 2	IN/OUT	AT$IOGP2	General purpose I/O pin. As an input, capable of being a pullup system.
GPIO - 3	OUT	AT$IOGP3	General purpose output. The state of the output is latched through a reset via an internal microcontroller. Capable of sinking up to 1.7A.
GPIO - 4	IN	AT$IOGP4	Determines state of power. If the state if LOW, the unit is running on battery (if applicable). If the state if HIGH, the unit is running on external power.
GPIO - 5	OUT	AT$IOGP5	General-purpose output, controls the RESET line of the GPS receiver. Set HIGH for normal operation, LOW to RESET the GPS receiver
GPIO - 6	OUT	AT$IOGP6	General purpose output, controls USR2 LED
GPIO - 7	OUT	AT$IOGP7	General purpose output, controls USR1 LED
GPIO - 8	IN	AT$IOGP8	General purpose input, detects the state of Ignition NOTE: GPIO8 should never be set to Output.

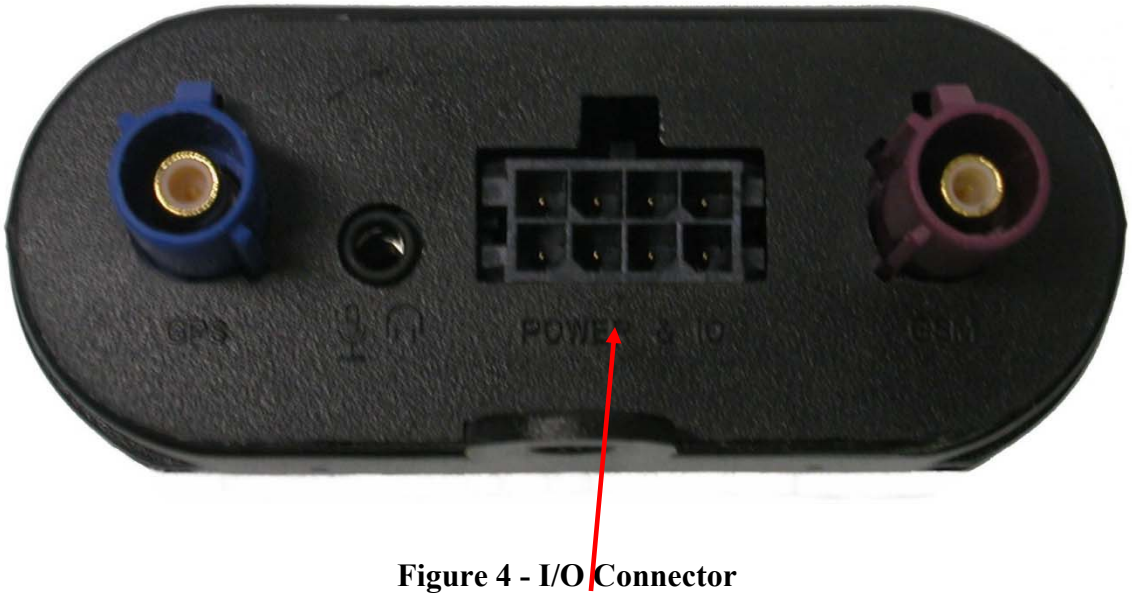


Figure 4 - I/O Connector

11. SkyPatrol TT8750 Cables and Connections

11.1. SkyPatrol TT8750 Serial Adapter (Optional)

SkyPatrol P/N CBL048 can be used to provide a standard serial interface for the SkyPatrol TT8750. This cable provides a three-wire serial RS232 interface and power to the unit. The cable would be used for loading new software onto the SkyPatrol TT8750 and configuration of the device.

> **Note:** *Only five of the pins are used; ground, serial in, serial out, vehicle power and ignition.*

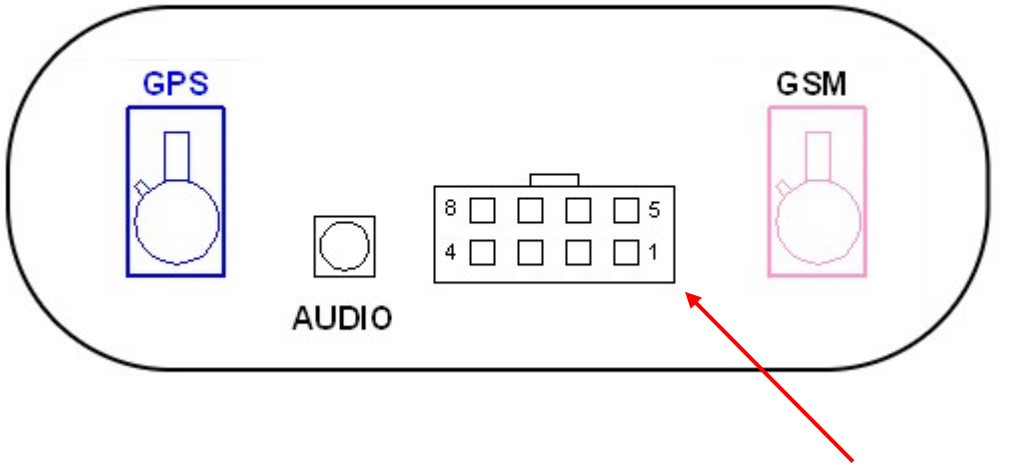


Figure 5 - 8-Pin Connection

The customer can also build their own cable, if they choose. The following information contains photographs and manufacturer part numbers for the parts needed to build the cable. SkyPatrol recommends using 20-gauge wire when building the connector.

The following show your options for connectors and pins:

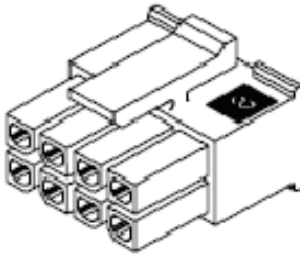
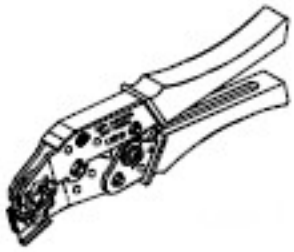
Connector: Manufacturer: Molex Part Number: 43025-0800	
Pins: Manufacturer: Molex Part Number: 43030-0008 20-24 AWG 43030-0011 26-30 AWG	
Crimp Tool: Manufacturer: Molex Part Number: 63811-2800	

Table 2 – Cable Assembly Parts

11.2. Preparing the Power and Serial Communications Cable

Use a factory-built wiring harness (CBL048) with serial data option or build a wiring harness according to the following schematic.

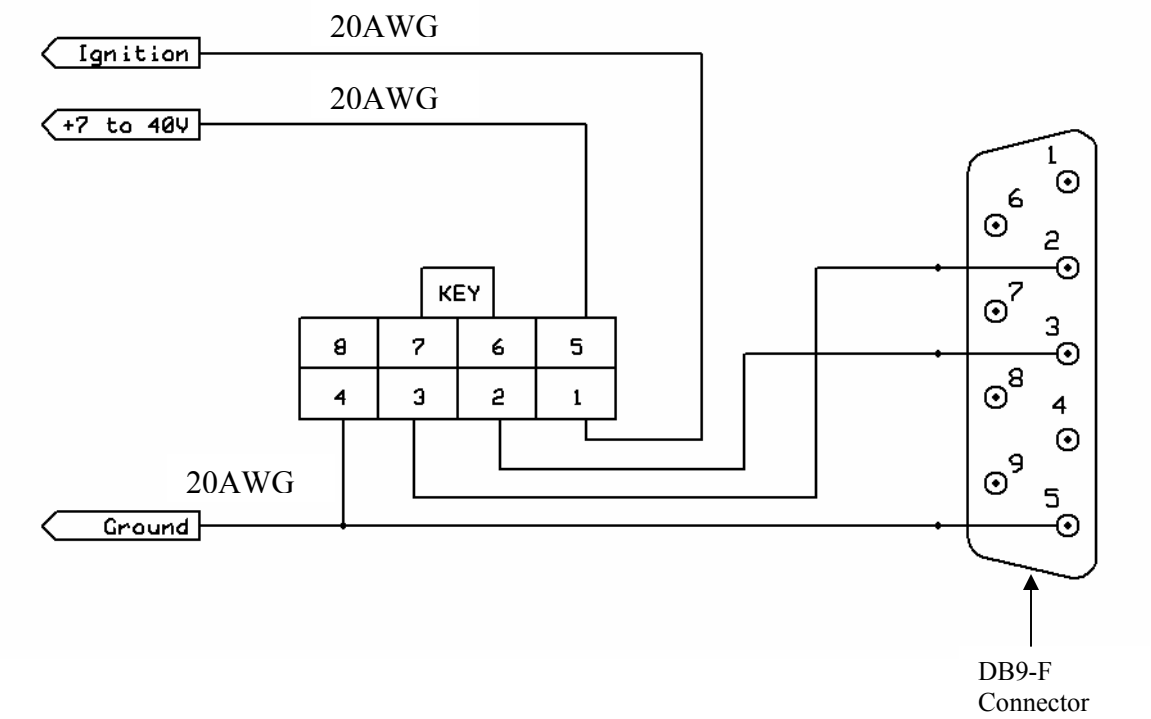


Figure 6 – Wiring Schematic

11.3. Preparing a Power-Only Cable

A cable may be manufactured that provides only power to the SkyPatrol TT8750 as shown in the following schematic:

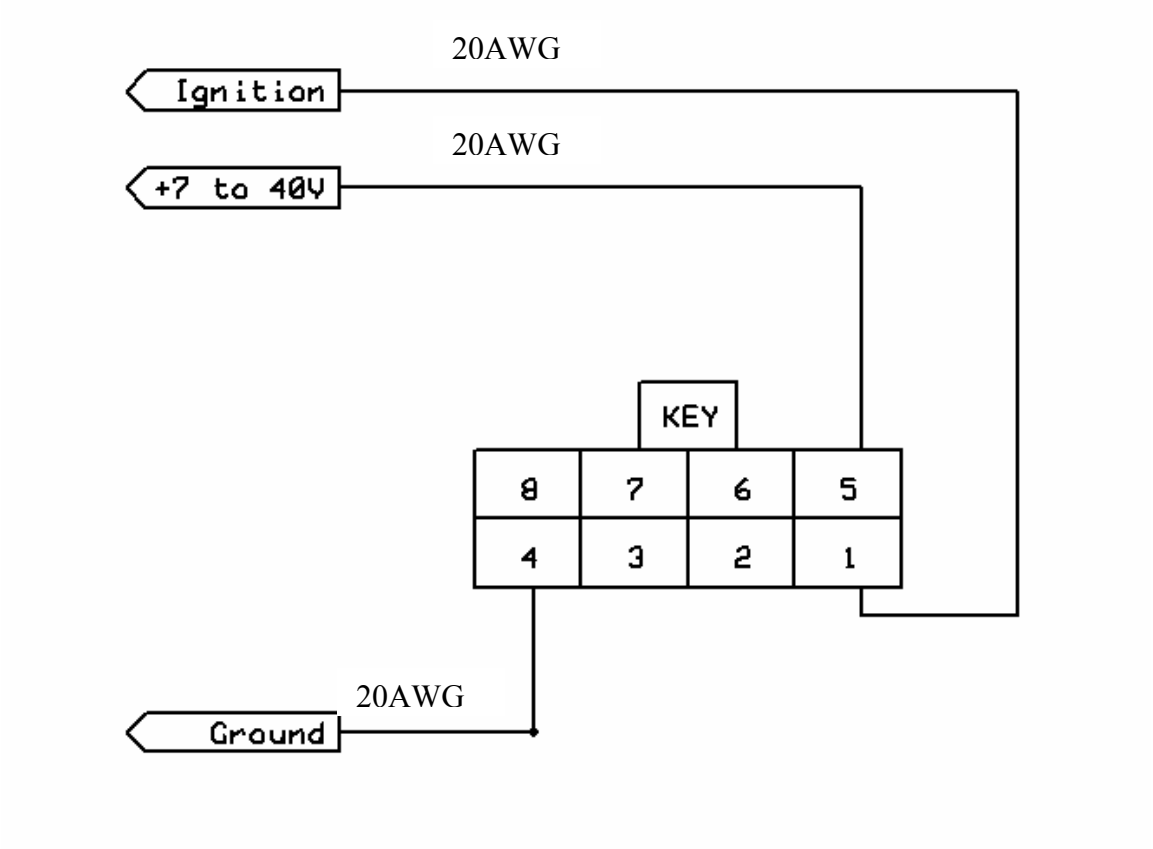


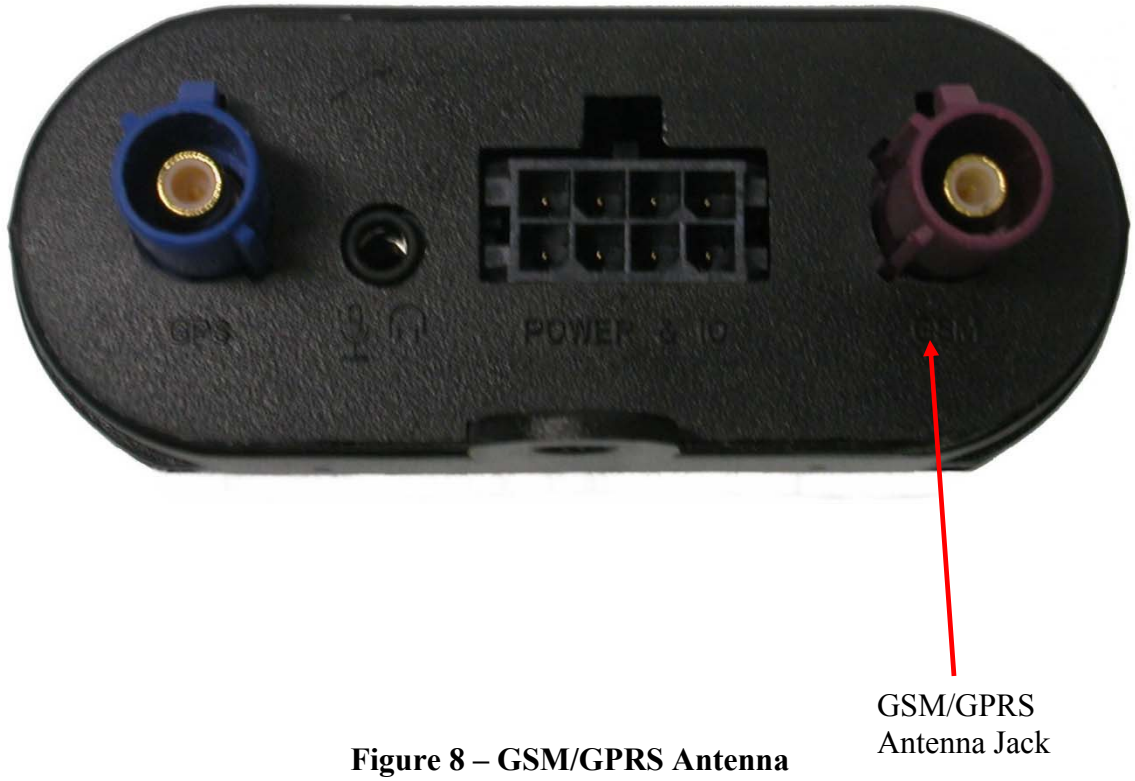
Figure 7 – Power-Only Cable Schematic

11.4. Connecting the GSM/GPRS Antenna

Choose an antenna that is designed for the frequency band the in which the SkyPatrol TT8750 is currently going to operate. The antenna jack is a standard FAKRA Bordeaux Violet connector.

Note: *The antenna must have a nominal impedance of 50 Ohms. The VSWR must be less than 2.0:1. System antenna gain should be 0 – 2 dB for optimum performance.*

Attach the GSM/GPRS antenna to **GSM** jack.



GSM/GPRS
Antenna Jack

Figure 8 – GSM/GPRS Antenna

11.5. Connecting the GPS Antenna

The MT-Gu has the capability of providing 3.3V to power an Active-Style GPS antenna. The GPS antenna connector on the SkyPatrol TT8750 model is a FAKRA Blue connector. The GPS antenna must be placed in an area where it can have direct view of the sky.

Install the GPS antenna to the GPS jack on the SkyPatrol TT8750 modem.

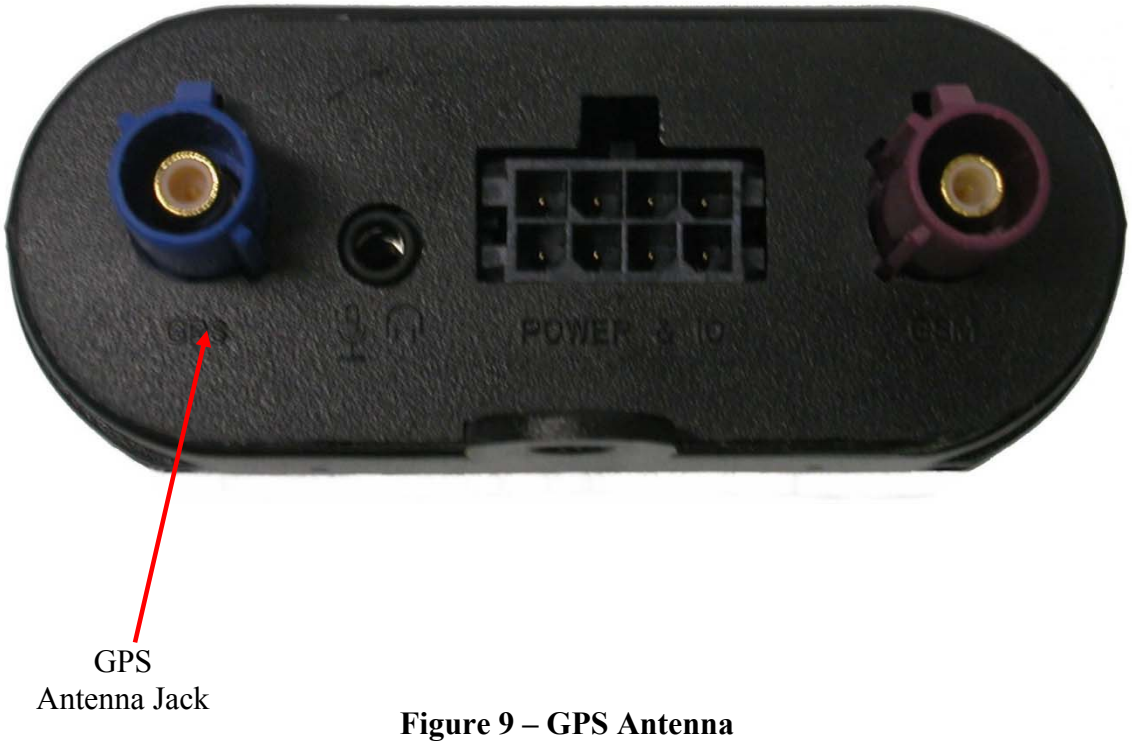


Figure 9 – GPS Antenna

11.6. Inserting the SIM and Applying Power

Insert the SIM per the Following Procedure:

Note: *The SIM card is not provided with the SkyPatrol TT8750 device. The SIM must be obtained from the GSM/GPRS service provider and must be provisioned by the operator for data and/or voice. Always take care to protect the SIM. Without the SIM installed, SkyPatrol TT8750 modem is limited to emergency voice communication only.*

The SIM Lock Switch is used to ensure the SIM remains in position, but also activates the battery circuitry (if applicable). The SIM Lock Switch does not have to be closed for the user to perform a 911 call or to register to the network.

1. Insert the SIM into the SIM Slot with the notch going into the slot first, and facing toward the left side of the SkyPatrol TT8750.

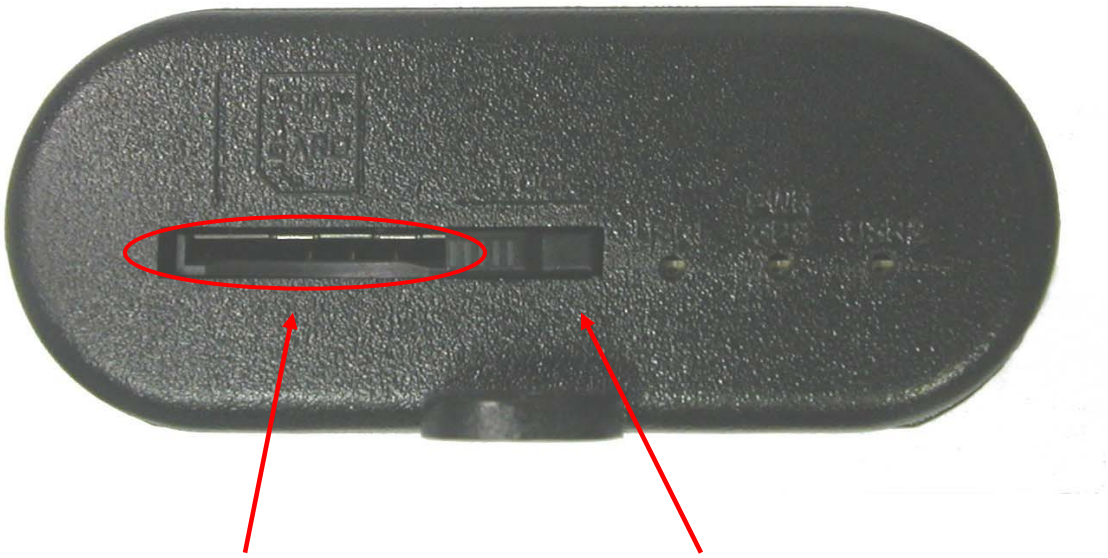


Figure 10 – SIM Slot and SIM Lock

2. Slide the SIM Lock Door to the left to lock the SIM into the holder.

Install the power cable as described in the following procedure:

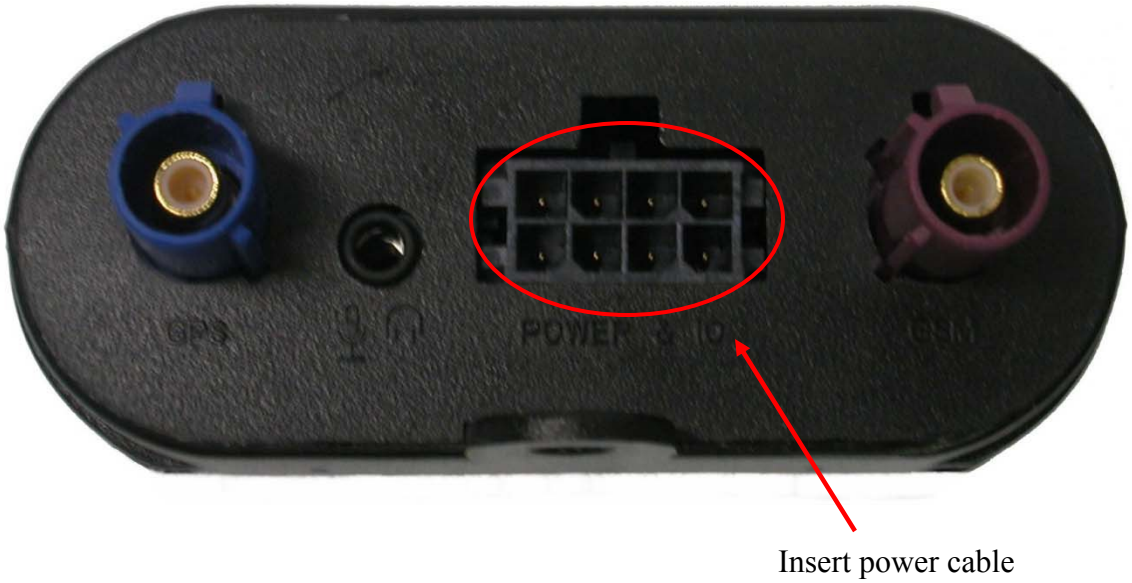


Figure 11 – Power Cable

1. Hook up the SkyPatrol TT8750 to a 7 to 40 Vdc power source and apply power.
2. The **GPS Power LED** should be solid red and the **User 1 LED** should start blinking green.
3. Once the SkyPatrol TT8750 attaches to the GSM network, the` **User 1 LED** should go solid green. If the **User 1 LED** stays blinking, then there is a problem with the SIM or cellular reception.
4. Once the SkyPatrol TT8750 acquires a GPS fix, the **User 2 LED** will be solid red.

12. Connecting the Power Source

The GSM/GPRS SkyPatrol TT8750 has an input voltage range of 7 – 40 V DC. The power and ignition pins can support 7 – 40 V DC input voltage. The user has an option to connect these wires depending on the desired functionality. Described below are the desired functionality and their associated wire connecting procedure:



Use of the device outside of the specified voltage range may result in damage to the device and/or undesirable results.



Please follow the specifications as listed in the table below. SkyPatrol is not liable for damage to the SkyPatrol TT8750 caused due to user error.



The SkyPatrol TT8750 (GSM2338) is designed to operate from 7 to 40 VDC. The user is responsible for ensuring the voltage supplied to the SkyPatrol TT8750 remains in this voltage range to include transient voltage spikes and load dump voltages. Failure to comply with this warning may result in damage to the SkyPatrol TT8750.

- Connect the power and ground wires of the SkyPatrol TT8750 to the vehicle battery leads. The SkyPatrol TT8750 will always remain ON as long as the vehicle battery lasts.

- The SkyPatrol TT8750 will be non-operational when the input voltage and current requirements are not met (vehicle battery drains) unless the unit is equipped with a battery.

- Connect the Ignition wire to a switched source that receives positive voltage when the ignition is on.

- Device goes through a reset upon an ignition transition, if connected.

12.1. LED Operation

The SkyPatrol TT8750 has three LED's on its front panel.

GPS PWR: Indicates power to the GPS module. LED is on when power is turned on and the GPS module is operational. LED is off when power is removed or when the SkyPatrol TT8750 enters standby mode.

User LED 1: This LED can be configured to display registration, or other user functions. By default, this LED indicates GSM/GPRS registration status. LED state of OFF indicates that the device is not attempting to register to the network. Blinking LED indicates that the device is trying to connect to the network. LED always ON indicates that the device is attached to the network.

User LED 2: This LED can be configured to display registration; GPS fix status or other user functions. By default, this LED indicates GPS fix status. The LED remains in OFF state when invalid GPS data is received. The LED remains ON when valid GPS data is received.

13. Configure the Computer and Verify Correct Communications

Note: *The following examples use Windows 2000 and Windows XP, and HyperTerminal. Please note that HyperTerminal is not included with the Windows Vista operating system. Any terminal program should work, using the parameters in Step 1.*

1. Default Serial Parameters

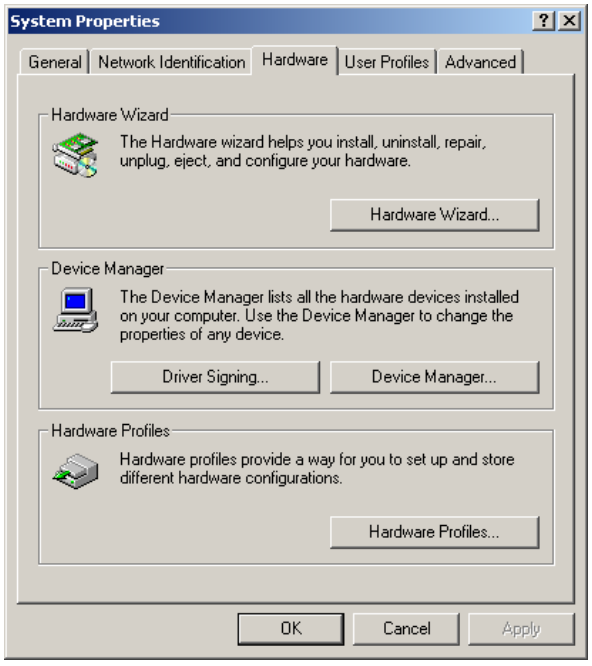
    a) 115200 baud rate
    b) 8 data bits
    c) 1 stop bit
    d) No Parity
    e) Flow Control = None

2. Determine which Com port to use

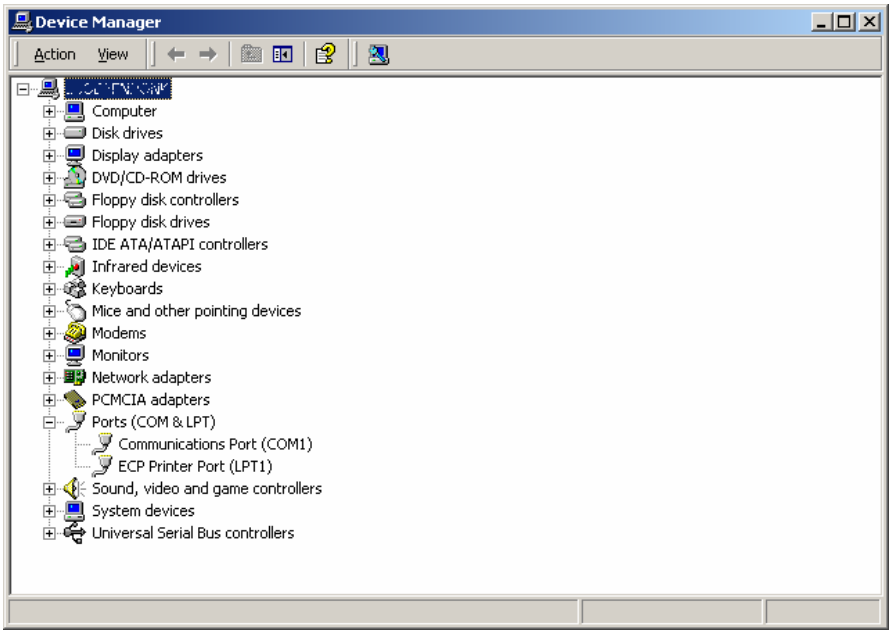
    a) On older computers, there is usually a built in Com port. This is normally Com1.
    b) If you are using a USB-to-serial converter, you will need to determine which Com port it is installed on.

        Note: *If the USB-to-serial converter has not been installed, install the necessary drivers per the instruction supplied by your USB-to-Serial device. Then leave the device unplugged.*

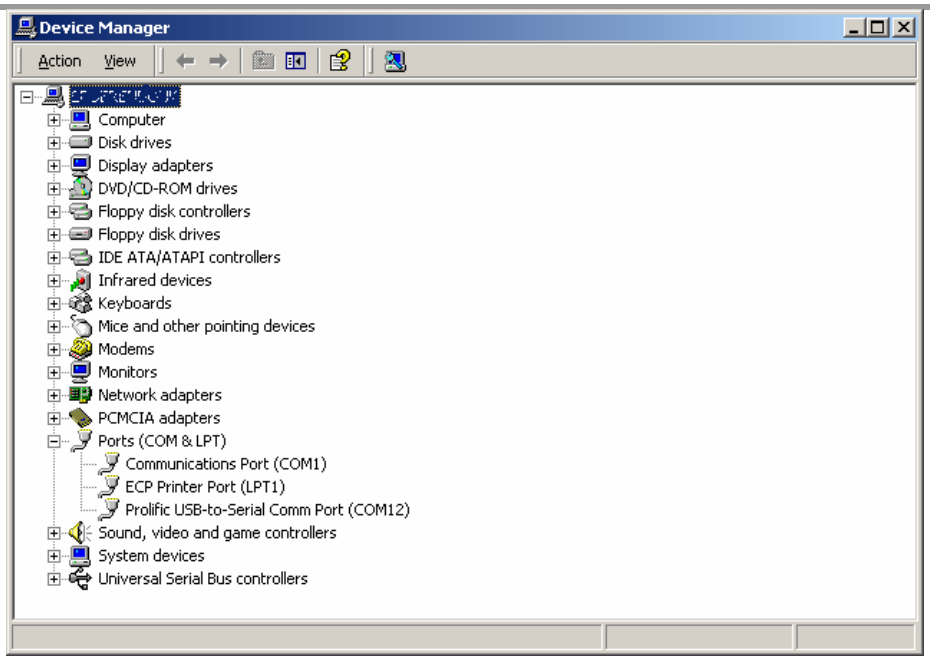
    c) Open up the System Properties window. This is done through the Control Panel > System or right-click on My Computer and select Properties. Select the Hardware Tab. On Windows 2000 the screen looks like the following:



d) Select the Device Manager button. Expand the Ports section by selecting the + sign beside Ports. Your window should look like the following:



e) Plug in the USB-to-Serial converter. The window should change to show the USB-to-Serial converter installed.



f) Most devices will show the Com port next to the device name. Record this number. In this case, it is COM12.

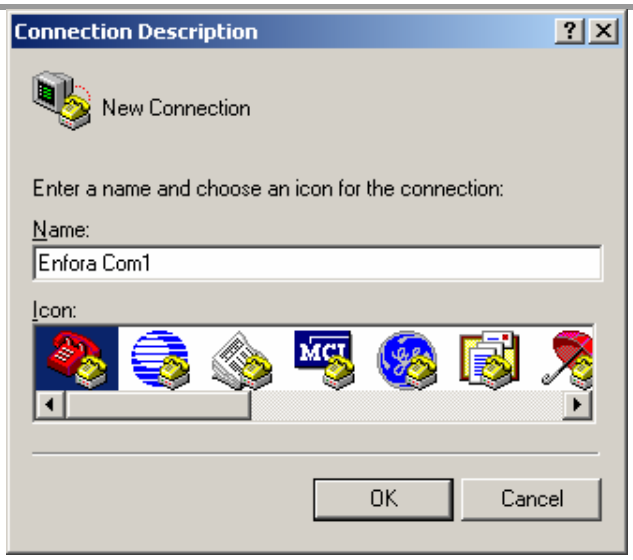
Note: *Make sure there is no "!" or "X" next to the USB device. If you see an "!" or an "X," the device is not properly installed and will not work.*

3. Start **HyperTerminal**

On **Windows 2000**, click on:

Start>Programs>Accessories>Communications>HyperTerminal

a) You should see the following screen.



b) Enter a name for the Connection. In this example, the Name is SkyPatrol Com1.

c) Click OK.

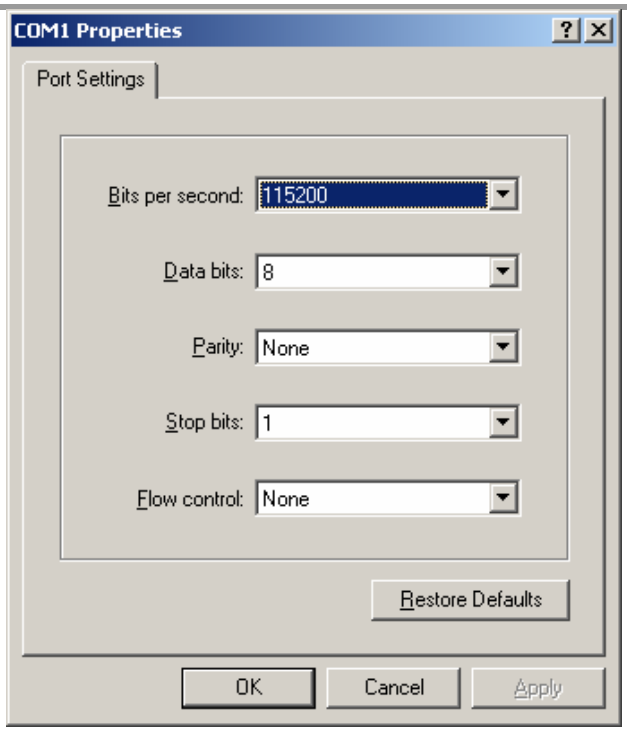
d) The next window that will appear is the Connect To window.



e) Change the Connect Using setting to the Com port that was determined in Step B.

f) Click OK.

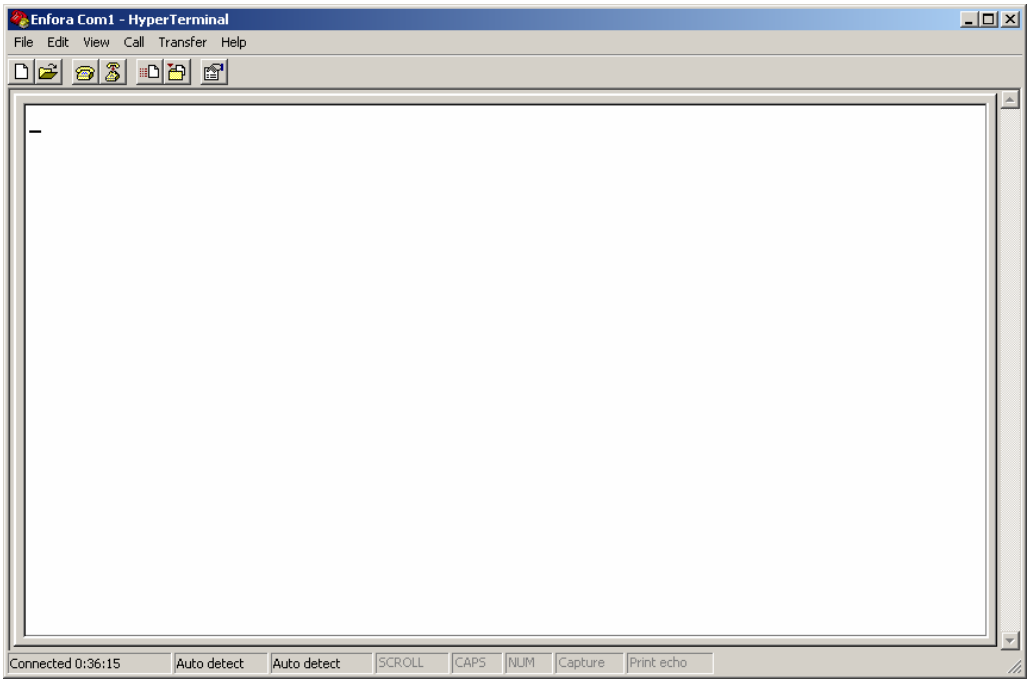
g) The next window is the Port Settings window.



h) Make sure the settings match the example.

i) Click OK.

j) Now the Main Program Window should appear.



14. Configure the SkyPatrol TT8750 to Communicate with the Server

1. Connect and verify Serial connectivity with the SkyPatrol TT8750.

   a) Connect the PC serial connector to the SkyPatrol TT8750 serial port.

      Note: *In the following instructions,* ***<CR>*** *means using the* ***Enter Key*** *on the keyboard.*

   b) With HyperTerminal open, hit the Enter key. The SkyPatrol TT8750 should respond with OK. If you do not see this response, double-check your connections. If the connections seem correct, disconnect the SkyPatrol TT8750 from the computer and perform the serial loop-back test (instructions follow):

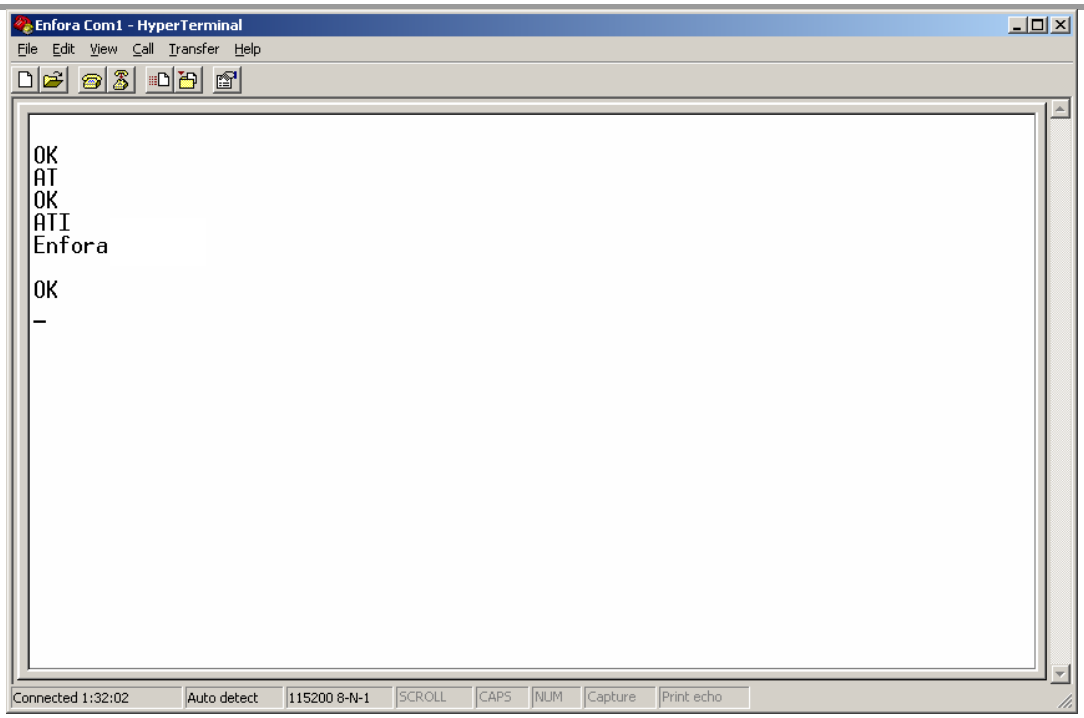
      Serial Loop-back Testing

      - Make sure the cursor is in the main window.
      - Start typing characters.
      - If all settings are correct, you should not see anything happening in the main window.
      - Jumper Pins 2 and 3 together on the Serial connector.
      - Start typing characters.
      - You should now see what you are typing appearing in the main window.

        If this happens, the COM port is configured correctly.

   c) Type AT<CR>. The SkyPatrol TT8750 should respond with OK. If you do not see the letters AT, send the following command to the SkyPatrol TT8750: ATE1<CR>

   d) Type ATI<CR>. The SkyPatrol TT8750 should respond with Enfora, Inc. If you get any different response, you are not connected to the SkyPatrol TT8750.



2. Configure the SkyPatrol TT8750 to communicate with the Test Server.

   a) The following information will need to be obtained from the SIM provider. Please refer to ***GSM0000AN019 – Network Configuration Worksheet.***
   b) APN
   c) Username and password (If necessary.)
   d) Reset the SkyPatrol TT8750 to factory defaults:

      1. To restore the SkyPatrol TT8750 to factory defaults, send the following command:
         AT&F<CR>
      2. To write current config to memory, send the following command:
         AT&W<CR>
      3. To reset the SkyPatrol TT8750, send the following command:
         AT$RESET<CR>

   e) Configure the SkyPatrol TT8750 to Access the GPRS network.

      1. To configure the SkyPatrol TT8750 with the proper APN, send the following command:
         AT+CGDCONT=1,"IP","apn"<CR> (substitute the letters "APN" for the supplied APN.)

2. To configure the SkyPatrol TT8750 with the proper username and password, (if necessary) send the following command:
   AT%CGPCO=1,"username,password",0<CR> (substitute the correct username and password)

3. To configure the SkyPatrol TT8750 to enable auto GPRS registration, send the following command:

   AT$AREG=2<CR>

4. Store the current configuration to memory, send the following command:
   AT&W<CR>

5. Reset the SkyPatrol TT8750 by removing power or sending the **AT$RESET<CR>** command.

6. Verify GSM status by sending the following command:

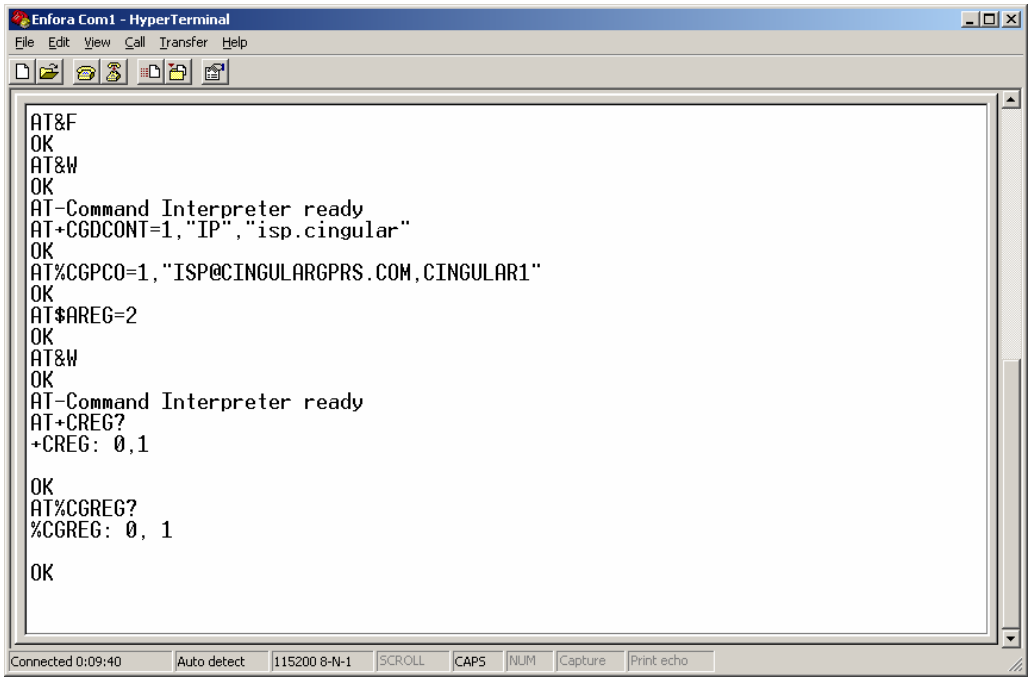
   AT+CREG?<CR>
   If everything is working, you should receive one of two responses:

   +CREG: 0,1 (GSM registered to home network)
   OR
   +CREG: 0,5 (GSM registered roaming.)

7. Verify GPRS status by sending the following command:
   AT%CGREG?<CR>

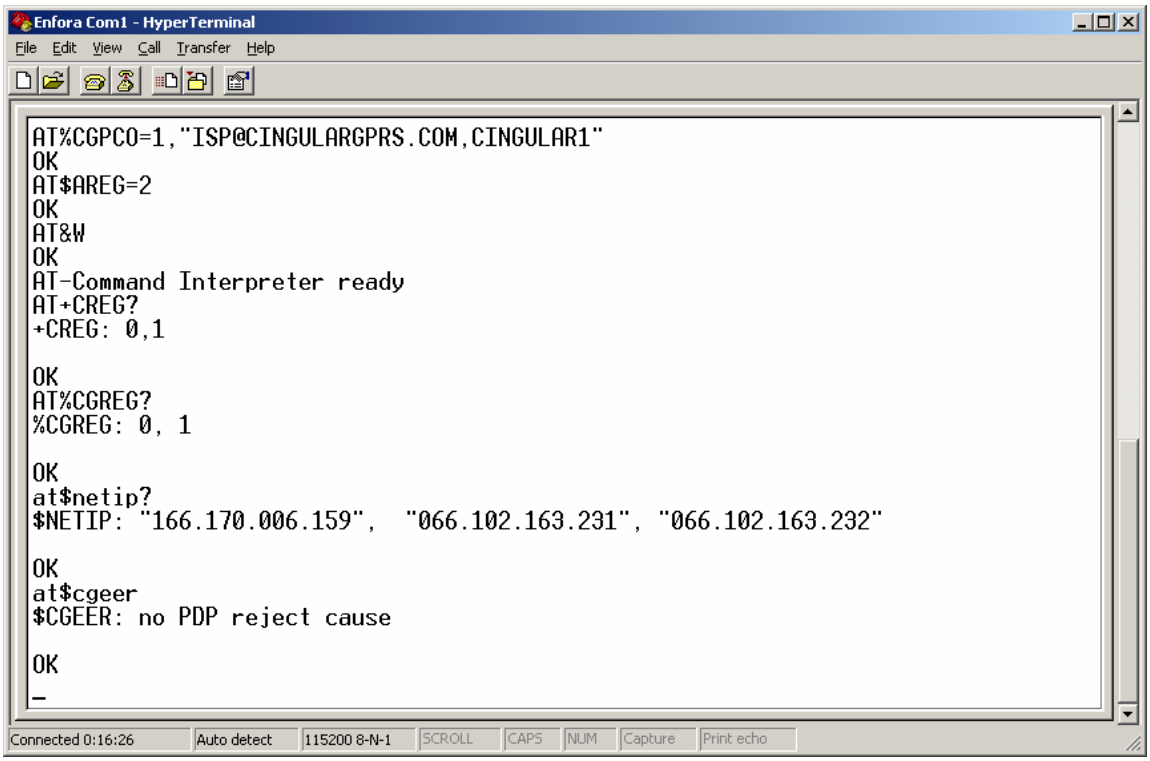
   If everything is working, you should receive one of two responses:

   %CGREG: 0,1 (GPRS registered to home network)
   Or
   %CGREG: 0,5 (GPRS registered roaming.)



8. Verify GPRS activation by sending the following command: AT$NETIP?<CR>

   If the response is non-zero, then everything is working. Skip to Step 10.



9. If AT$NETIP returns all zeros, send the following command: AT$CGEER<CR>

    - There are three common responses:
        - $CGEER: no PDP reject cause (Everything should be working OK)
        - $CGEER: requested service option not subscribed (APN is incorrect or SIM has not been enabled for data mode.)
        - $CGEER: user authentication failed (username and/or password is incorrect.)

10. Configure the SkyPatrol TT8750 to access the Server.

    Note: *To configure the SkyPatrol TT8750 for server interoperability, several things have to be addressed:*

    - Most GPRS configurations are Mobile Originate only. The mobile SkyPatrol TT8750 must initiate a conversation with a remote server before the remote server can talk to the SkyPatrol TT8750.
    - IP addresses are dynamically assigned and can change.
    - Some IP addresses are NAT and are non-routable IP addresses.

    These issues are addressed with the following configuration commands.

    The examples will use the following information:

    - Modem ID/name = “MT_Test”
    - Remote Server DNS address = apitest.enfora.com
    - Remote Server IP port = 1721

11. Give the SkyPatrol TT8750 a unique name.

    - Send the following command: AT$MDMID=”MT_Test” This command, combined with the wakeup message, will allow the server to associate a Public IP address with a specific SkyPatrol TT8750 and create a window of opportunity where the server can send commands to the SkyPatrol TT8750

12. Configure the SkyPatrol TT8750 to talk with a specific server.

    - Send the following command: AT$FRIEND=1,1,”apitest.enfora.com”

13. Set the port number

    - Send the following command: AT$UDPAPI=,1721

14. Enable periodic messages (wakeup) to be sent to the server every 60 seconds

    - Send the following command: AT$WAKEUP=1,1



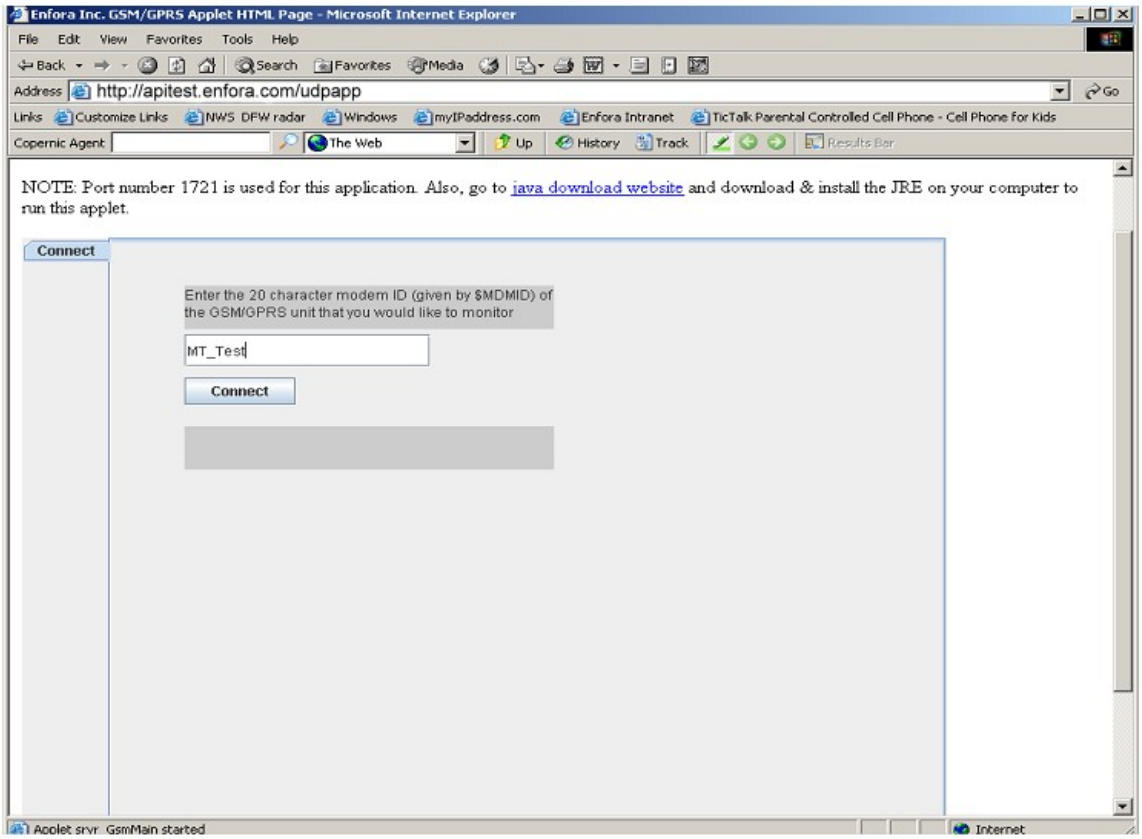
15. Verifying Server Connectivity

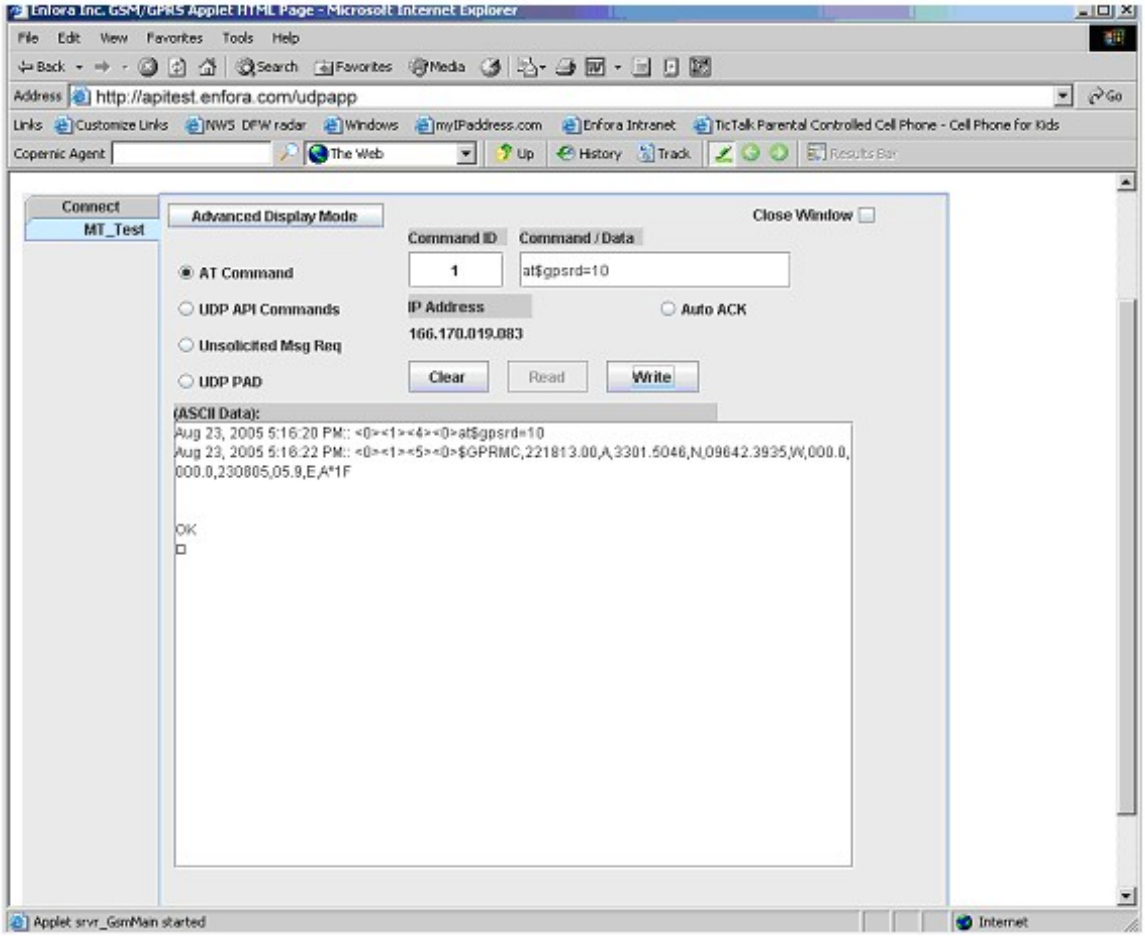
Note: For the following tests, Java Runtime must be installed on the computer. (To install Java Runtime, please visit the Java website here: http://www.java.com/en/download/manual.jsp)

1. Start Internet Explorer and enter the following URL: http://apitest.enfora.com/udpapp/

2. Enter the name used in the MDMID command in the box. Select **Connect**.

3. Select the tab with the SkyPatrol TT8750 name. Within approximately 60 seconds the wakeup messages should be seen in the window.

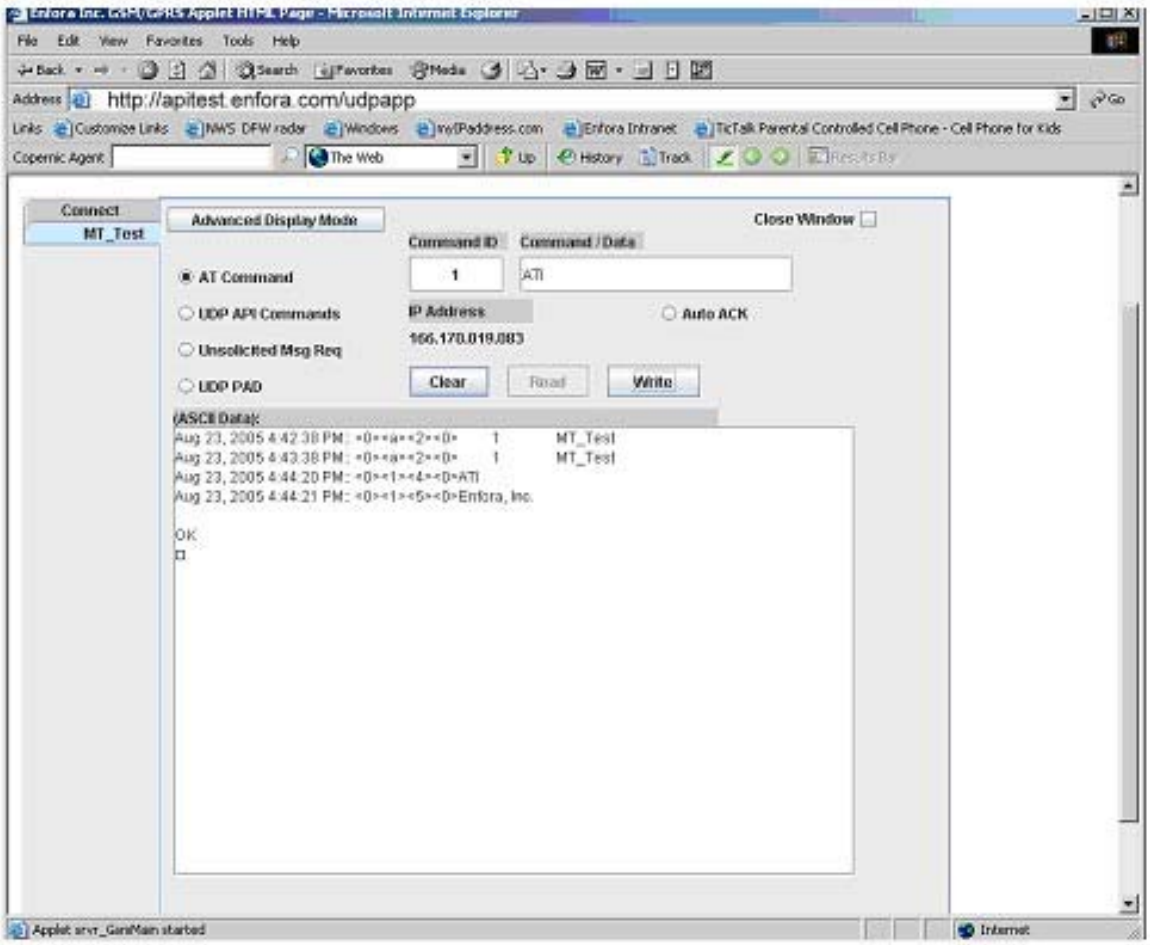




4. Enter the following command in the command/ data block: ATI

5. Select **Write**.

6. Verify that you see the following the SkyPatrol TT8750 response with Enfora, Inc. If so, you have successfully configured the SkyPatrol TT8750 to talk with the server.


File Edit View Favorites Tools Help
Address http://apitest.enfora.com/udpapp
Connect
MT_Test
Advanced Display Mode
Close Window
Command ID
Command / Data
AT Command
1
ATI
UDP API Commands
IP Address
Auto ACK
166.170.019.083
Unsolicited Msg Req
UDP PAD
Clear
Read
Write
(ASCII Data):
Aug 23, 2005 4:42:38 PM: <0><4><2><0> 1 MT_Test
Aug 23, 2005 4:43:38 PM: <0><4><2><0> 1 MT_Test
Aug 23, 2005 4:44:20 PM: <0><1><4><0>ATI
Aug 23, 2005 4:44:21 PM: <0><1><5><0>Enfora, Inc.
OK

16. Verify GPS Operation

Follow these directions to verify GPS Operation.

1. From the terminal window, send the following command:
   AT$GPSRD=10<CR>

2. The SkyPatrol TT8750 should respond with a standard GPRMC message that looks similar to the following:

$GPRMC,221223.00,**A**,3301.5080,N,09642.3857,W,000.0,000.0
,230805,05.9,E,A*19

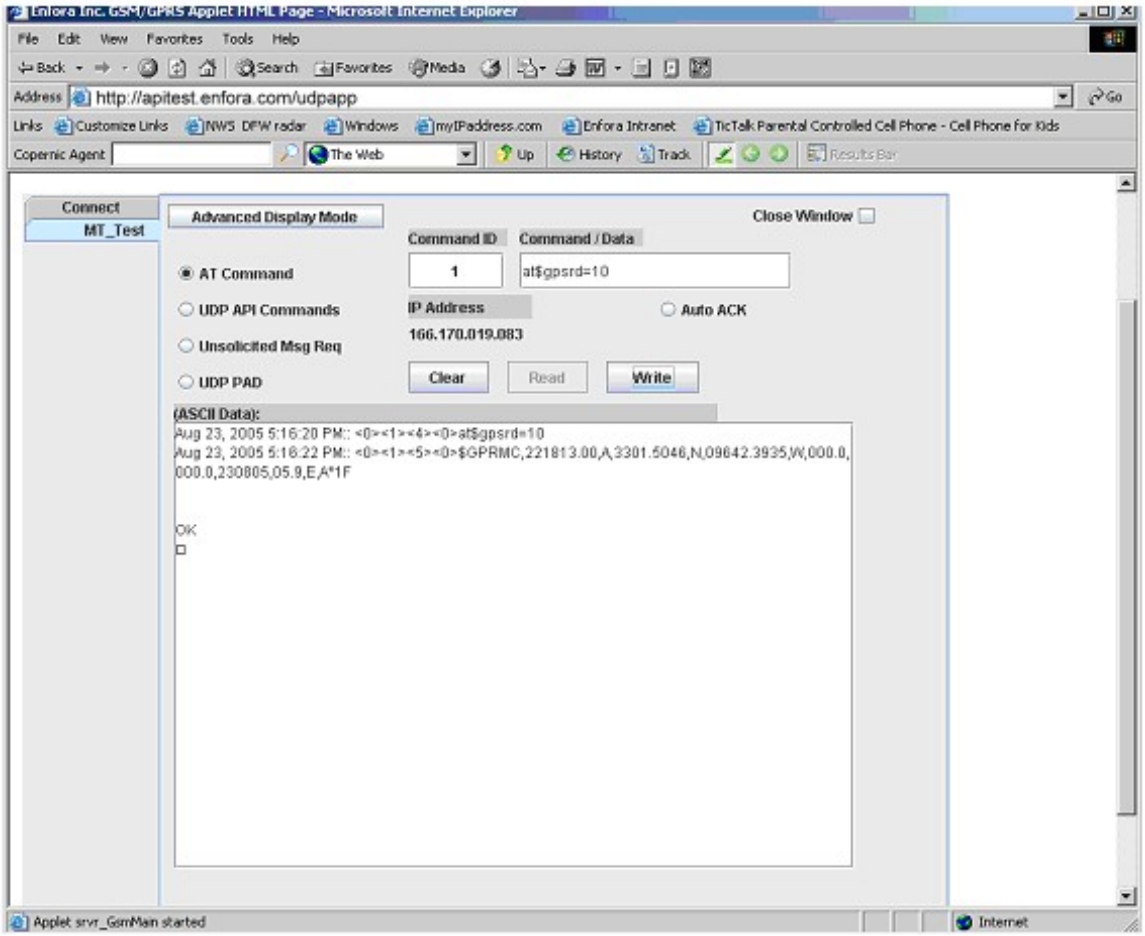
Note: The entry shown in bold is the current GPS status. There are three possible values here:

- A = OK
- V = Warning
- 9 = SkyPatrol Specific response that GPS solution is not valid and the last known GPS location is being substituted.

Here is an example of a GPRMC message without a GPS lock:

$GPRMC,221553.30,**V**,,,,,,,,,,N*7C

The same command can be used in the server app.


Enfora Inc. GSM/GPRS Applet HTML Page - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://apitest.enfora.com/udpapp
Connect
MT_Test
Advanced Display Mode
Close Window
Command ID
Command / Data
AT Command
1
at$gpsrd=10
UDP API Commands
IP Address
Auto ACK
166.170.019.083
Unsolicited Msg Req
UDP PAD
Clear
Read
Write
(ASCII Data):
Aug 23, 2005 5:16:20 PM:: <0><1><4><0>at$gpsrd=10
Aug 23, 2005 5:16:22 PM:: <0><1><5><0>$GPRMC,221813.00,A,3301.5046,N,09642.3935,W,000.0,
000.0,230805,05.9,E,A*1F
OK
Applet srvr_GsmMain started
Internet

17. Additional Software Features

The following software features are included in the SkyPatrol TT8750:

A user can send AT commands, via SMS, to the SkyPatrol TT8750. Refer to the following application note for details:

Please refer to SkyPatrol Application Note ***GSM0000AN022 – AT Commands Over SMS***.

The ability to store event data in memory, upon event trigger occurrence, and transmit data when desired.

- The user can configure the SkyPatrol TT8750 to store event-generated data, to be sent over the air to a remote server, in its internal memory. This feature can be enabled or disabled using the AT$MSGLOGEN command.

- "Total Number of Unread Messages" is decremented if an unread message is read via the AT$MSGLOGRD command.

  Example: Assume there are 50 unread messages in the GPRS queue and the total number of messages in GPRS queue is 100. This means that the first 50 messages have been read while the last 50 messages have not been read. If a user sends AT$GPSLOGRD=0,1,51 then the total number of unread messages drops down to 49 after successful transmission of that message. However, if a user sends AT$GPSLOGRD=0,1,99 then the total number of unread messages still remains at 50 – that message is transmitted to the remote server.

- A user can also read a message that has already been read from the memory by passing in the appropriate starting index number.

Synchronize RTC time with GPS time

- RTC time is synched with GPS time automatically
- RTC time is synched with GPS time every time the device is powered up and the device acquires valid GPS data
- RTC time is synched with GPS time every time the GPS time rolls over from 23:59:59 to 00:00:01

Allow a user to append RTC date and time at the end of event data

- Bit-21 for Parm2, for output message types 40 – 42 & 45 (in AT$EVENT command), has been added to allow users to send RTC time along with event data
- The RTC date and time contains Year, Month, Day, Hour, Minute, and Second fields
- 6 bytes of information is appended in Binary format when bit-21 is enabled. Each byte represents an individual field
- 12 ASCII character (12-bytes) representing RTC date and time is appended in ASCII format when bit-21 is enabled. Two bytes (or two ASCII characters) represents an individual field

Revision History

Date	Rev	Author	Description
08/15/08	1.00	Diane O'Neil	Initial Release