



# PinPoint XT

## User Guide



**SIERRA**  
WIRELESS

2140712  
Rev 2.0



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## Important Notice

Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices such as the Sierra Wireless AirLink PinPoint XT are used in a normal manner with a well-constructed network, the Sierra Wireless AirLink PinPoint XT should not be used in situations where failure to transmit or receive data could result in damage of any kind to the user or any other party, including but not limited to personal injury, death, or loss of property. Sierra Wireless accepts no responsibility for damages of any kind resulting from delays or errors in data transmitted or received using the Sierra Wireless AirLink PinPoint XT, or for failure of the Sierra Wireless AirLink PinPoint XT to transmit or receive such data.

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Do not operate the Sierra Wireless AirLink PinPoint XT in areas where blasting is in progress, where explosive atmospheres may be present, near medical equipment, near life support equipment, or any equipment which may be susceptible to any form of radio interference. In such areas, the Sierra Wireless AirLink PinPoint XT **MUST BE POWERED OFF**. The Sierra Wireless AirLink PinPoint XT can transmit signals that could interfere with this equipment.

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*Note: Some airlines may permit the use of cellular phones while the aircraft is on the ground and the door is open. Sierra Wireless AirLink PinPoint XT may be used at this time.*

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The driver or operator of any vehicle should not operate the Sierra Wireless AirLink PinPoint XT while in control of a vehicle. Doing so will detract from the driver or operator's control and operation of that vehicle. In some states and provinces, operating such communications devices while in control of a vehicle is an offence.

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Consult our website for up-to-date product descriptions, documentation, application notes, firmware upgrades, troubleshooting tips, and press releases:

[www.sierrawireless.com](http://www.sierrawireless.com)

## Revision History

Revision number	Release date	Changes
1.x	2003-2005	AirLink Communications documentation - CDPD, CDMA, and GPRS.
2.x	Q2: 2005-Q2: 2007	AirLink Communications documentation - CDMA, EV-DO, EDGE, and HSUPA/HSDPA.
3.0	Q2: 2008	Converted documentation from AirLink Communications documentation format into Sierra Wireless documentation format. Phase II of the conversion completed. PinPoint modem line documentation is revised.
4.0	Q1: 2010	Converted documentation from AirLink Communications documentation format into Sierra Wireless documentation format.





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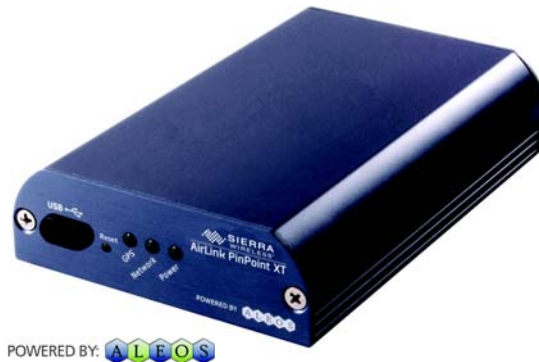


# >> 1: Introduction to the PinPoint XT

- ACEware™
- Connecting to your cellular provider
- GSM
- Connection methods
- Networking
- Applications
- Software
- Documentation

The PinPoint XT is a compact, intelligent and fully-featured mobile communications platform. Expanded I/O functionality in a separate connector includes four digital inputs, three analog inputs and two relay outputs unleashing extensive remote instrumentation possibilities.

Its high-precision 50-channel GPS receiver coupled with the rich embedded intelligence provided by ALEOS™ technology make PinPoint XT the perfect choice for a broad set of mobile enterprise, public safety, fleet management and AVL solutions.



POWERED BY: ALEOS

Figure 1-1: Sierra Wireless AirLink PinPoint XT

## ALEOS™

ALEOS, the embedded core technology of the Sierra Wireless AirLink products simplifies installation, operation and maintenance of any solution, and provides an always-on, always-aware intelligent connection for mission-critical applications. ALEOS enables:

- Persistent Network Connectivity
- Over-The-Air (OTA) Upgrades
- Wireless Optimized TCP/IP
- Real-Time Notification
- Real-Time GPS Reporting
- GPS Store and Forward
- Packet Level Diagnostics

- Device Management & Control
- Protocol Spoofing



Figure 1-2: Powered by ALEOS

## ACEware™

A wireless solution is not complete until you have software tools to manage the devices monitoring your valuable equipment. Using the AirLink Control Environment (ACE), ACEWare is the device management and monitoring application suite for Sierra Wireless AirLink devices powered by ALEOS.



Figure 1-3: ACEware Logo

The ACEware suite encompasses an application internal to the firmware (ACEmanager), Windows-based applications (ACEview and Modem Doctor), and a web-hosted application (ACEnet). You can download the applications and their user guides from the Sierra Wireless AirLink Solutions web site: <http://www.sierrawireless.com/support>. Contact your dealer or Sierra Wireless representative for any further information.

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*Note: ACEview requires the Microsoft .NET Framework v. 2.0 and Microsoft Windows 98, Windows 2000, Windows XP, or later. You can obtain the Microsoft .NET Framework from Microsoft at: <http://www.microsoft.com/>.*

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ACEmanager, the AceWare remote configuration and monitoring tool, simplifies deployment and provides extensive monitoring, control and management capabilities. ACEmanager gives you the power to monitor and control your Sierra Wireless AirLink communications platforms in real-time.

## Simplified Deployment

ACEmanager provides the ability to remotely set up and configure your Sierra Wireless AirLink products. Remote device setup and configuration reduces the deployment timeline of your wireless solution and provides a quicker path to ROI.

Templates allow you to easily configure devices in your fleet with identical settings, ensuring a simple, accurate deployment.

## Monitor and Control

ACEmanager allows an administrator to remotely monitor a modem's status, health and configuration settings. The user interface displays signal strength, cell site information, byte counters and error conditions, enabling you to pinpoint any issues and troubleshoot immediately.

ACEmanager enables remote configuration and parameter settings to be changed or reset instantly over the air, change a device's port configuration, IP address settings, GPS settings, and much more. After configuring one modem, use the template feature to copy that device configuration to other devices.

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**Tip:** *Configuration steps and examples in this guide use ACEmanager.*

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ACEview is an efficient status and connection monitoring application with a low-profile, easy to read interface. In ACEview, you can also update PRL.

## Modem Doctor

Modem Doctor and Modem Doctor USB is a troubleshooting and diagnostics utility. This utility will allow you to get a log file of the PinPoint XT activity which you can then send to Sierra Wireless support or erase the current configuration completely.

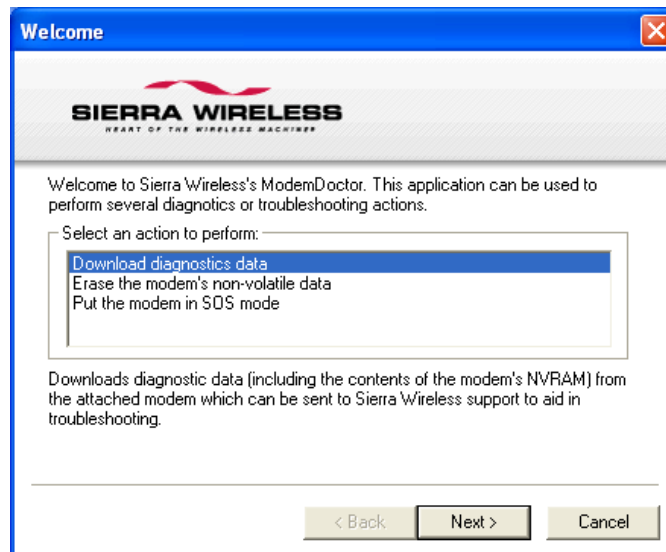


Figure 1-4: Modem Doctor

## Connecting to your cellular provider

The PinPoint XT uses your cellular provider as an ISP (Internet Service Provider) to connect you to the Internet.

### Steps of a connection:

1. When your PinPoint XT is powered on, it automatically searches for cellular service using GSM/GPRS.
2. Your PinPoint XT establishes a PPP (Point to Point Protocol or “dial” up connection) link to your cellular provider network, also called registering on the network, and receives an IP address.
3. When your PinPoint XT has received its IP address from your cellular provider, a connection to the Internet or the cellular network is also available for computers or other devices connected directly to the PinPoint XT.

The PinPoint XT will perform routing for all internet traffic to and from the computers or other end device.

With the PinPoint XT in Ethernet Public mode, only one device connected to the Ethernet port will receive the public IP address which is the one provided by the cellular network. In Ethernet Private mode, with a hub or switch connected to the Ethernet port, the PinPoint XT will provide NAT for a range of computers or other devices connected to the switch or hub and Internet access to all of them.

## Dynamic vs. Static IP Addresses

There are two types of addresses on networks: dynamic and static.

- Dynamic addresses are assigned on a “need to have” basis. Your PinPoint XT might not always receive the same address each time it connects with your cellular provider.
- Static addresses are permanently assigned to a particular account and will always be used whenever your PinPoint XT connects to the Internet. The IP address will not be given to anyone else.

Most ISPs (cellular included) use dynamic IP addresses rather than static IP addresses since it allows them to reuse a smaller number of IP addresses for a large number of customers. A dynamic IP address is suitable for many common Internet uses, such as web browsing, looking up data on another computer system, or other client functions (such as data only being sent out or only being received after an initial request).

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**Tip:** *If your account with your cellular provider includes a dynamic IP address and you need a static IP, please consult your cellular provider Representative for more information about changing your account for static IP support.*

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If you need to contact your PinPoint XT, a device connected to the PinPoint XT, or a host system using the PinPoint XT from the Internet, you need to have a known IP (such as one which is static) or domain name (an IP address which is converted by a DNS server into a word based name). If you have a dynamic IP address for your modem, you can use a Dynamic DNS service (such as IP Manager) to translate your IP address into to a domain name.

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**Caution:** *If you want to connect remotely to your PinPoint XT using TCP/IP, the IP address given to your modem by your cellular provider cannot be a private or internal IP address (such as a special private network) unless you are on the same network or inside that network's firewall (such as with frame relay).*

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## GSM

GSM Networks use SIM cards which are smart cards containing the account holder's details. A SIM can generally be moved from one device to another allowing for account portability and flexibility.

## GPRS

General Packet Radio Service (GPRS) is packet-switched with many users sharing the same transmission channel, but only transmitting when they have data to send. This means that the total available bandwidth can be immediately dedicated to those users who are actually sending at any given moment, providing higher utilization where users only send or receive data intermittently. GPRS provides speeds of 30–70 kbps with bursts up to 170 kbps.

## Connection methods

You can connect the PinPoint XT to a USB or a Ethernet (RJ45) on a computer. When connected to a USB or Ethernet port, the PinPoint XT behaves like a network card.

## USB

The PinPoint XT is equipped with a USB port which increases the methods by which you can send and receive data. The USB port can be set to work as either a virtual Ethernet port or a virtual serial port. A driver installation is required to use the USB port in either mode.

It is recommended that you use a USB 2.0 cable with your PinPoint XT and connect directly to your computer for best throughput.

## Virtual serial port

The PinPoint XT supports one virtual serial port over USB. This VSP can be used, for example, to send AT commands, or to run many serial based applications such as HyperTerminal®.

## Networking

### IPSec

The IP protocol that drives the Internet is inherently insecure. Internet Protocol Security (IPSec), which is a standards-based protocol, secures communications of IP packets over public networks.

IPSec is a common network layer security control and is used to create a virtual private network (VPN).

The advantages of the IPSec feature includes:

- **Data Protection:** Data Content Confidentiality allows users to protect their data from any unauthorized view, because the data is encrypted (encryption algorithms are used).
- **Access Control:** Access Control implies a security service that prevents unauthorized use of a Security Gateway, a network behind a gateway or bandwidth on that network.
- **Data Origin Authentication:** Data Origin Authentication verifies the actual sender, thus eliminating the possibility of forging the actual sender's identification by a third-party.
- **Data Integrity:** Data Integrity Authentication allows both ends of the communication channel to confirm that the original data sent has been received as transmitted, without being tampered with in transit. This is achieved by using authentication algorithms and their outputs.

The IPSec architecture model includes the Sierra Wireless AirLink gateway as a remote gateway at one end communicating, through a VPN tunnel, with a VPN gateway at the other end. The remote gateway is connected to a Remote network and the VPN is connected to the Local network. The communication of data is secure through the IPSec protocols.

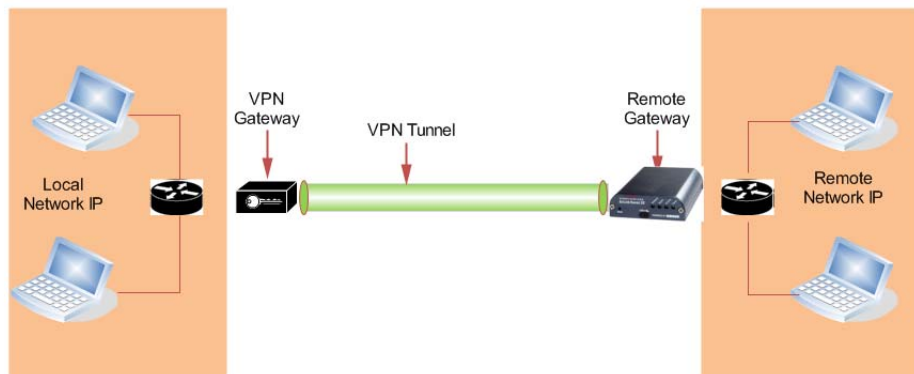


Figure 1-5: IPsec Architecture

## GRE

GRE (Generic Routing Encapsulation) tunnel is used to carry non-IP packets through an IP Network. Non-IP packets, that are send over the GRE tunnel, need to be first encapsulated. Hence, ALEOS is used to configure and encapsulate non-IP packets and transmit over IP through the GRE tunnel.

## Applications

### Events Reporting

Events Reporting allows the users to generate reports from the events that take place. Event Reporting Protocol is an intuitive embedded protocol, which automatically formats the messages based on an event trigger. The messages generated are then reported to the remote server.

An event occurs, when any of the following takes place:

- Customer device opens or closes a switch
- Customer device raises or lowers analog voltage
- device RSSI goes below or above a threshold
- device power goes below or above a threshold.

A report is generated when the device sends a message caused by an event.

*The Events Reporting tab that displays in ACEmanager, is applicable across all Sierra Wireless AirLink devices.*

## Software

The PinPoint XT modem comes with the following software:

- AceView, the software for the PinPoint XT which allows you to monitor your connections.

- The driver that forms the interface between the PinPoint XT and your Windows operating system when using USB virtual Ethernet or USB virtual serial.
- The firmware that is stored in non-volatile memory and includes ACEmanager.

The PinPoint XT has an embedded radio module, also made by Sierra Wireless, Inc. There are two firmware programs on the device—one stored on the controller board of the PinPoint XT and one on the radio module.

The firmware was loaded into the radio module and controller board when the PinPoint XT was assembled. As new versions of the software and firmware are released, they are posted at [www.sierrawireless.com](http://www.sierrawireless.com).

## Documentation

This *PinPoint XT User Guide* describes how to:

- Install the PinPoint XT hardware.
- Connect the radio antennas.
- Connect a notebook computer and other input/output (I/O) devices.
- Interpret the LEDs on the PinPoint XT and the indicators in the AceView software.

This *User Guide* is provided as a PDF (Portable Document Format) file on the installation CD or from the Sierra Wireless support website.

**Table 1-1: Tools and Reference Documents**

User Guide	Description
<b>ALEOS User Guide</b>	This document discusses software configuration in ACEmanager and explains different ALEOS features.
<b>ACEview User Guide</b>	This document explains the use of this utility tools which is used to view and monitor the connection state of a Sierra Wireless AirLink device.
<b>ACEnet User Guide</b>	This document explains the use of ACEnet services for remote management of Sierra Wireless AirLink device.



## >> 2: Specifications

- [Interface Port Pin-Outs](#)
- [Power Connector](#)

### Features and Benefits

- Embedded Intelligence
- Low Power Consumption
- High-Speed Processor
- High-Speed 2-way Data
- USB and I/O Port
- High-Sensitivity GPS Receiver
- Persistent Network Connectivity
- Remote Management and Configuration
- Extensive Vehicle Telemetry
- Integrated with 3rd Party Tracking Applications
- Rugged for Extreme Environments

### Technology

- GPRS (MS-12)  
With Fallback to:
  - GSM

### Bands

- Quad Band GSM/GPRS
  - 850/900/1800/1900 MHz

### Environmental

- Operating Temperature:
  - -30° to 70° Celsius
- ° Storage Temperature:
  - -40° to 85° Celsius

### Power Consumption: (@12V DC)

- Transmit/Receive (Typical/Max) 250/300 mA
- Low Power Mode 32 mA
- Input Voltage 9 - 28V DC

## Standards/Approvals

- Carrier specific approvals
- FCC
- PTCRB
- Industry Canada

## Host Interfaces

- USB2.0 Full Speed (Mini-B5)
- I/O: 6 Programmable I/Os, 3 Analog/Digital
- Antenna Connection:
  - Cellular - 50 Ohm SMA
  - GPS - 50 Ohm SMA

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**Warning:** *The antenna should be installed no closer than 20 cm from the human body. It is one of the RSS-102 requirements for devices not requiring SAR.*

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## Dimensions

- 76mm x 27mm x 121mm
- 317 grams

## Application Interfaces

- TCP/IP, UDP/IP, DHCP, HTTP, SNMP, SMTP, SMS, MSCI, NMEA, TAIP, GPS, and more

## LED Indicators

- Network
- GPS
- Power

## Interface Port Pin-Outs

\*Digital I/Os (DIO 1 to 6) in ACEmanager, in correspondence to the Pin-Outs, is shown in the diagram.



Figure 2-1: PinPoint XT I/O Port Diagram (not to scale)

The relay contacts are rated for 30 Vdc max and 500mA max

**Table 1: Pin-out**

11 - Programmable I/O	1 - Board Ground
12 - Programmable I/O	2 - Programmable I/O
13 - Serial Out Rx (3.3V)	3 - Programmable I/O
14 - VCC IN (Input Voltage)	4 - Serial Input Tx (3.3V)
15 - Ground	5 - NC (No Connect)
16 - NC (No Connect)	6 - Analog Input 2
17 - Programmable I/O	7 - Digital In Ground
18 - Programmable I/O	8 - Analog In1 (IGT)
19 - Relay Ground	9 - Board 3.3V
20 - Analog Input 3	10 - Analog In GND

## Power Connector

The power connection is integrated into the I/O port.





## 3: Activating PinPoint XT on your cellular provider

3

- Installing the SIM
- Configuring the APN

This chapter provides step-by-step directions for activating your PinPoint XT on your cellular provider's network.

### Installing the SIM

The Subscriber Identity Module (SIM) in the PinPoint XT is a smartcard that securely stores the key identifying a cellular subscriber. Generally, you will only need to install a SIM once in the life of the modem and it may be pre-installed by your Sierra Wireless Representative.

If the SIM was pre-installed activation of your modem is complete.

### Cellular Account Required

- **Cellular Account Required-** To use your modem, you need to have a SIM with an active account with GPRS.

### Software Required

- **ACEmanager** - Graphical interface for entering most AT Commands. You can download ACEmanager from the Sierra Wireless AirLink Solutions website: <http://www.sierrawireless.com/support/>. A default installation of this utility is assumed later in these directions

### Hardware Required

- **Power adapter and a power source** - You will need a power supply and power source for the modem.
- **PC or laptop** - To configure the modem, you will need a computer with an available .

### Tools Required

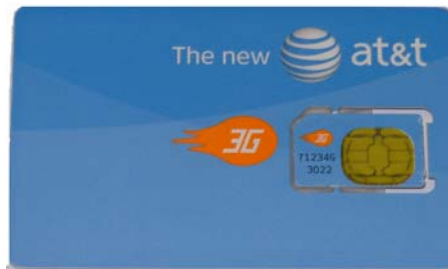
- **Small Phillips screw driver** - The Phillips screw driver is the one which is also called a plus (+) or X screw driver.

- a. Unplug the PinPoint XT power and all cables.
- b. Using a small phillips head screw driver, remove the screws on the front.
- c. Set the faceplate aside.



*Figure 3-1: Faceplate*

Carefully remove the SIM card from the card you received from your cellular provider.



*Figure 3-2: Sample of the SIM card*

Gently press the SIM to click it into place.

---

**Tip:** *The top of the card faces the bottom of the modem.*

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*Figure 3-3: Inserting the SIM*

Replace the cover to prevent dust or other unwanted particles from entering the PinPoint XT. Once the cover is replaced, the installation is complete.

---

*Note: The first time you power on your PinPoint XT with your new SIM, there may be a delay of up to 10 minutes for the initial network connection to occur.*

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## Configuring the APN

The APN (Access Point Name) is the way your device knows how it will be communicating with the network. The APN allows custom IP addressing and tailoring your company's wireless IP solution to meet the security and IP addressing requirements of your applications.

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*Note: Most accounts use the default addressing solution of Private or Public IP addresses supplied by the Internet and Proxy APNs. Only if you have a Static or Custom IP address should you need to configure a custom APNs.*

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The default APN is *Internet*. If you need a different APN, use ACEmanager to configure it.





## 4: Hardware Installation of the PinPoint XT

- Connecting to Power
- Connecting to a Computer or other Device
- Indicator Lights
- Mounting

*Note: During installation, please be sure that the cables are secure but do not bear any additional weight that could loosen the connector from the unit.*

Your PinPoint XT should be mounted in a position that allows easy access for the cables so they are not bent, constricted, in close proximity to high amperage, or exposed to extreme temperatures. The LEDs on the front panel should be visible for ease of operational verification. You should ensure that there is adequate airflow around the modem but that it is kept free from direct exposure to the elements, such as sun, rain, dust, etc.

**Caution:** *The PinPoint XT is in a hardened case and designed for use in industrial and extreme environments. However, unless you are using cables expressly designed for such environments, they can fail if exposed to the same conditions the PinPoint XT can withstand.*



Figure 4-1: PinPoint XT Connectors

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*Note: This device is not intended for use within close proximity of the human body. Antenna installation should provide for at least a 20 CM separation from the operator.*

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Antennas selected should not exceed a maximum gain of 5 dBi under standard installation configuration. In more complex installations (such as those requiring long lengths of cable and/or multiple connections), it's imperative that the installer follow maximum dBi gain guidelines in accordance with the radio communications regulations of the Federal Communications Commission (FCC), Industry Canada, or your country's regulatory body (if used outside the US).

Your PinPoint XT will work with most cellular antennas with a connector. Connect the primary antenna or primary RF cable directly to the antenna connector on the back of the PinPoint XT.

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**Tip:** *When using a cable to an antenna placed away from the modem, minimize the length of your cable. All gain from a more advantageous antenna placement can be lost with a long cable to the modem.*

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## GPS Antenna

Your PinPoint XT will work with most standard active GPS antennas. Connect the GPS antenna or cable directly to the threaded SMA connector.

Mount the GPS Antenna in the vehicle. The less the cable is wrapped and bound together, the better it will perform. Place it on the roof, or on the dash, or rear panel where it has a good view of the sky (greater than a 90 angle view of the sky).

There are three options for antenna mounts:

- Magnetic roof-mount
- Through glass-mount
- Permanent mount

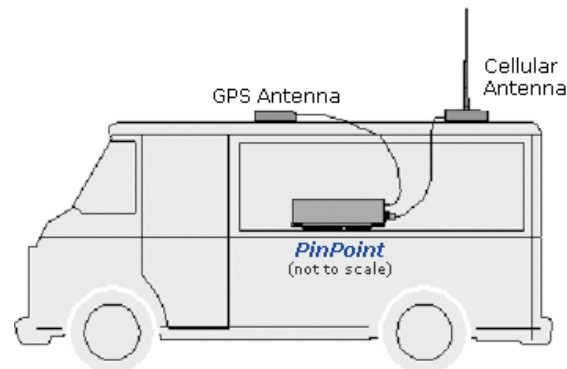


Figure 4-2: GPS Antenna Placement for a Vehicle

## Connecting to Power



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**Warning:** *Risk of electric shock: Only use the supply voltages listed in this user guide.*

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**Warning:** *When using AC to DC adapter the ambient temperature should not exceed 40°C.*

---

Your PinPoint XT can be used with either DC or AC, with the appropriate power adapter. DC cables and AC adapters are available as optional accessories in addition to the one included with your PinPoint XT.

The cable included with your PinPoint XT, is a DC cable with Standby Ignition Sense which connects to the 20-pin I/O connector. Other optional accessory cables include:

- A DC power cable with a DB-9 female serial connector (P/N 120-140-1021)
- A DC power cable with I/Os (P/N 120-140-1022),
- A fused DC power cable (P/N 120-140-1023),
- A DC power cable with a battery-charger circuit
- An auxiliary battery connector (P/N 120-140-1024)
- A DC power cable with 4-pin adaptor (P/N 120-140-1025) which connects to AC adaptor (P/N 120-100-1013).

The DC power cable positive lead should be connected to the battery or power source positive terminal. The power cable negative lead should be connected to the battery or power source negative terminal.

The PinPoint XT has an internal polysilicon circuit breaker that opens at 0.5 to 1.0 amps of current.

If you wish to use the Standby Ignition Sense (SISE) feature of your PinPoint XT, the wire of the DC power cable should be used to connect to your ignition. When SISE is enabled in the modem and the ignition sense connector is wired to your vehicle, the ignition sense will provide a link to the modem to enable it to enter a low-power, standby mode when your vehicle is turned off and power up more quickly when the ignition is started.

---

**Warning:** *Explosion Hazard - Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.*

---

Connecting to a Computer or other Device



Figure 4-3: USB

Your PinPoint XT's full-speed (12 Mbit) USB 2.0 port can be connected directly to most computers or other devices using a standard full-speed USB 2.0 cable. If the computer or device you are connecting or the cable is not rated for full-speed, the modem will communicate at a reduced speed to match. The PinPoint XT functions as a device, not a host.

When it is connected to a computer, the USB port should be seen as a COM port or Ethernet port after the applicable driver is installed.

The PinPoint XT has a standard mini-B connector.



Figure 4-4: I/O

Your PinPoint XT also has an I/O port with digital inputs, analog inputs, and relay outputs which can be connected to external devices.

The I/O port can use an optional I/O harness available through Sierra Wireless.

When solid, PinPoint XT indicates a successful connection. When your PinPoint XT is connected to power and an antenna, there is a specific pattern to the lights to indicate its operation mode.



Figure 4-5: PinPoint XT Indicator lights

- **Network** - Indicates a successful connection to the cellular network with an IP address given and a channel acquired.

**RSSI LED Ranges**

RSSI/Signal LED Status	Ranges of RSSI (dBm)
On Solid	Equal to or stronger than -69
Fast Blink	-70 to -79
Normal blink	-80 to -89
Slow Blink	-90 to -99
Extinguished	Equal to or weaker than -100

- **GPS** - Indicates a GPS fix. When lit, the PinPoint XT has GPS coordinates to report.
- **Power** - Indicates the power adapter is connected and there is power getting to the PinPoint XT.

**Light Patterns**

The LEDs on the front of the modem will respond in different patterns to indicate modem states.

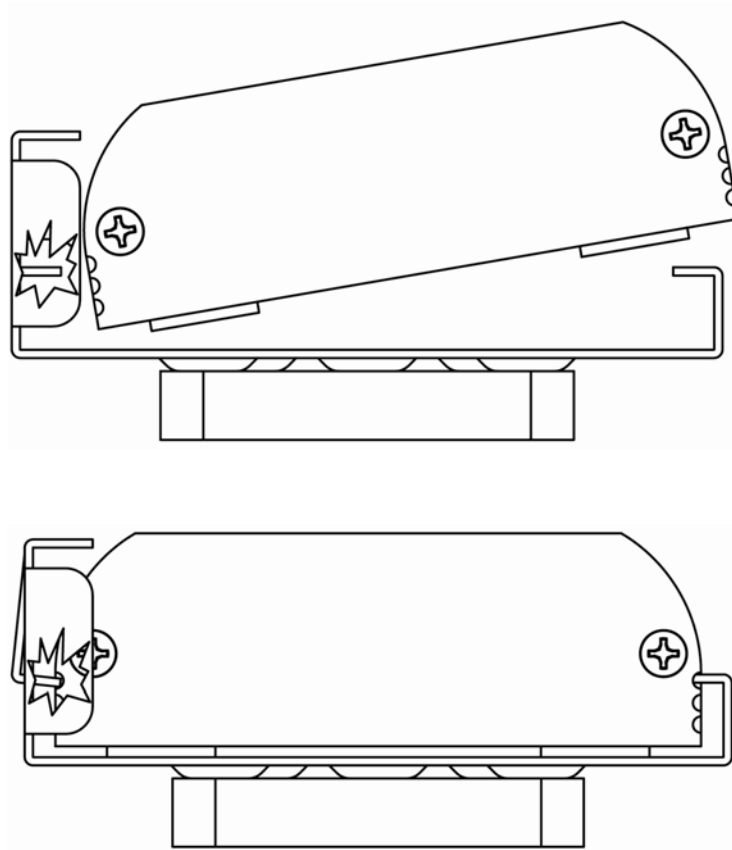
- **Normal** - Each LED, mentioned above, is lit as applicable.
- **Start up** - The LEDs will cycle from left to right.
- **PassThru mode** - Network LED will blink.
- **Low Power** - All LEDs will be off except the power LED which will blink every 3 seconds.
- **Bad Firmware** - The Network LED will blink.
- **Incorrect Firmware** - The GPS LED will blink.

An optional accessory for your PinPoint XT is a mounting kit, which includes a bracket. The bracket is designed to snugly cradle the modem and hold it in place where you need it. You can use a strap around the bracket and modem for extra security. The bracket can be attached to a stationary location using #6 screws with the mounting hole diameter approximately 0.150".

The instructions to bracket installation is following:

1. Mount the bracket using number 6 screws. There are two holes each, to fasten screws, and minimum of one hole each end is required for mounting bracket.
2. Position PinPoint XT between Alignment ears.
3. Engage top groove in body of PinPoint XT with two tabs.
4. Push on far side of PinPoint XT in center so that it touches side of Bracket.
5. Press down and release when upper groove on far side of PinPoint XT, aligns with tabs.
6. Release to complete installation in to mounting bracket.

To remove, press on the two edges of the modem and the brackets, as pointed by arrows in the diagram provided below. By doing this, the modem will snap out of the mounting bracket.



*Figure 4-6: Mounting bracket installation*







## >> 5: Connecting the PinPoint XT

- [ACEmanager](#)
- [Using a Terminal Application with AT Commands](#)
- [AT Command](#)

With ALEOS as its “brain”, the PinPoint XT is a highly configurable device.

To configure your PinPoint XT, you have two options. You can use the configuration and management applications of the AceWare suite or you can use a terminal emulator application such as HyperTerminal, PuTTY, or many others.

### ACEmanager

To get a more expanded view of the other ACEmanager features, refer to the ACEmanager Guide.

A full listing of all the configuration commands for your modem are in [Chapter 6](#).

### Using a Terminal Application with AT Commands

You can access and configure your PinPoint XT using a terminal application such as Microsoft HyperTerminal, PuTTY, or similar. The following directions are for HyperTerminal which is part of a standard installation of Windows XP.

1. Choose a name and icon for your connection
  - a. Choose a name for your connection, such as *PinPoint XT* or *Sierra Wireless AirLink Solutions*. The name and icon are only for your own reference so you can find the connection at a later date.

---

**Tip:** *If you want to have a connection saved for both local and remote, it is recommended the connection name reflect the connection type, i.e. PinPoint XT local.*

---

- b. Select OK.
- c.

2. Connect to

Using USB/Serial:

- a. Select *COM1*, or the comport to which the modem is connected, for the “Connect Using”.

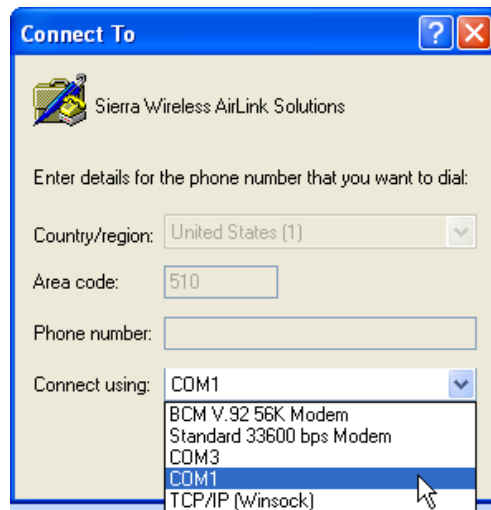


Figure 5-1: Connect To

- b.** Change or verify the settings:
- Bits per Second: 115200 (default)
  - Data Bits: 8
  - Parity: None
  - Stop Bits: 1
  - Flow Control: Hardware.

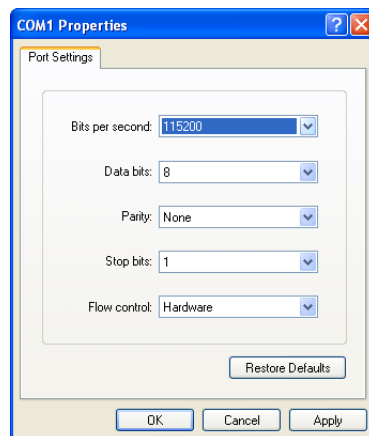


Figure 5-2: Port Settings

---

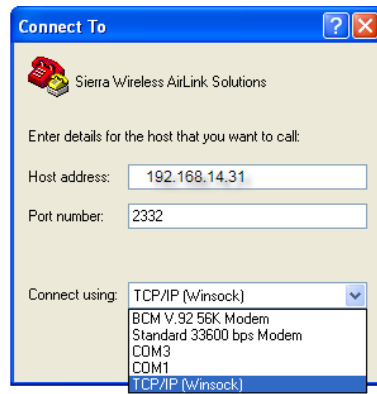
**Tip:** If you have configured the PinPoint XT for settings different than the defaults for Bits per Second, Data Bits, Parity, and/or Stop Bits, you will need to use your changed settings.

---

- c.** Select OK.

Using Ethernet:

- d.** Change the “Port Number” to 2332.



e. Select OK.

### 3. Connected

Connecting on USB/net will prompt for password.

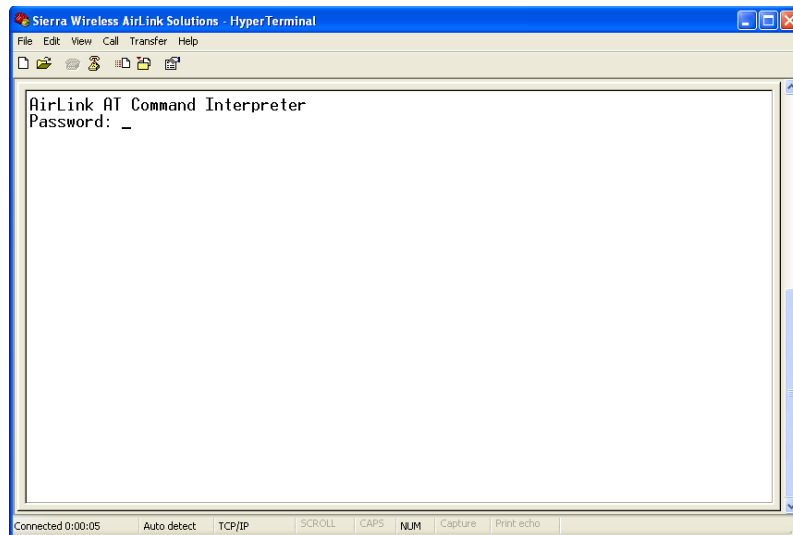


Figure 5-3: HyperTerminal : TCP/IP connected

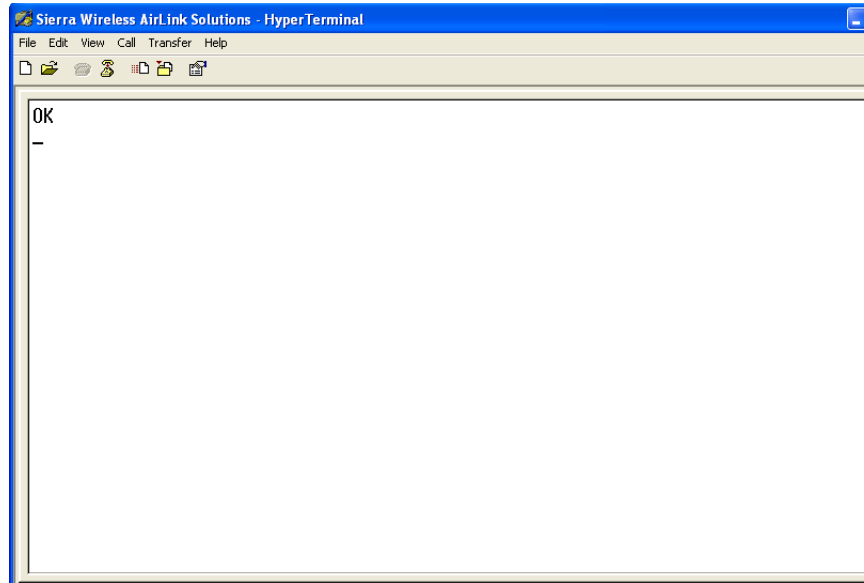


Figure 5-4: HyperTerminal : connected

- a. If you are prompted for a password, enter *12345* (default password).

---

**Tip:** *You will not be prompted for a password if you connect using a COM port.*

---

- b. Type *AT* and press *Enter*. You should get a reply of “OK” or “0”.
- c. To see what you are typing as you type it, you will need to turn on the echo and verbose mode. Type *ATE1V1* and press *Enter*.
- d. If you get a reply of “OK”, then you entered the command successfully. If you get a reply of “0” or “ERROR”, try entering the command again.

## AT Command

When using a terminal application, you will need to manually type in each command.

- For most commands, when you are entering them using a terminal connection, you will need to preface the command with *AT* (exceptions are noted), i.e. *ATA* which is listed as *A*.
- Some commands have specific parameters while other commands will take whatever you type.
- Required variable parameters are denoted with italicized text, example, *Dn*. The *n* is variable.
- Acceptable parameters and/or specific formats are listed with each command.
- Most commands with parameters can be entered with *?* to read the current value (for example, *AT&D?* will respond with “2” if the default has not been changed).

- Optional parameters are denoted with square brackets [ ].
- AT Commands are not case sensitive. A capital “E” is the same as a lower-case “e”.
- When you are using a terminal connection, if you enter a command which is recognized by the PinPoint XT, it will respond with “OK”. If the command is not recognized, the response will be “ERROR”.
- Those commands applicable only to certain model numbers of the PinPoint XT will be noted.

---

**Caution:** *Symbols listed with commands, such as \*, /, &, or ?, are part of the command and must be included. Commands with symbols other than \* may require PassThru mode.*

---



## >> 6: Inputs, Relay Outputs, and Power Status

- [Capturing External Events using Inputs](#)
- [Power Modes and Information](#)

The PinPoint XT has special features for use in a mobile environment. The PinPoint XT can be configured to monitor the input, respond to specific types of events, and even trigger a digital output. The PinPoint XT can also be configured to change its power mode in order to conserve power. These features can be configured to your needs.

### Capturing External Events using Inputs

The PinPoint XT is equipped with a combination power and I/O port interface which includes 6 digital inputs, 3 analog inputs, and 2 relay outputs. The inputs and outputs may be connected to sensors and switches to monitor vehicle status and remotely control equipment.

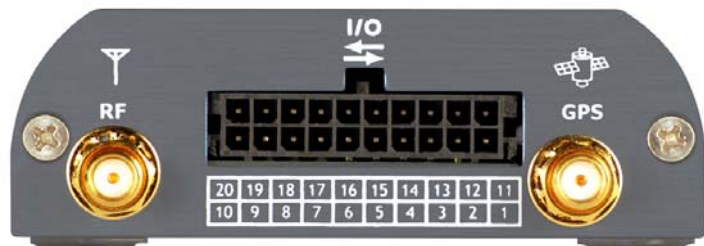


Figure 6-1: PinPoint XT combination I/O and power port

### Analog Inputs

The analog inputs will report a specific voltage ranging from 0 to 30 in increments of 0.03 volts. This allows a fine degree of monitoring for a scaling device.

- Monitoring a voltage or power usage.
- Monitoring an oscilloscope.
- Monitoring temperature.

- Monitoring an incremental gauge.
- Monitoring an internal fan.
- Monitoring a vehicle payload.
- Monitoring the elevation of a tow bar.
- Monitoring a vehicle's battery use.

## Digital Inputs

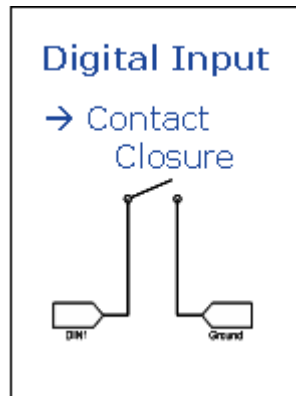


Figure 6-2: Digital Input Contact Closure

By measuring contact closures on switches, the digital inputs can report a simple open or closed state. Each of the four digital inputs can be wired to the two ground signals via a switch. When the switch is open, the input will read "OPEN". When the switch is closed and the input is connected to ground, the input will read "CLOSED".

- When a door or other latch is opened or closed.
- Counting pulses or other electronic events.
- When a gauge reaches a certain point.
- When a container fills or empties.
- When a switch or valve is opened or closed.
- When the tow bar is raised or lowered.
- Connected to a sensor, the level of fuel in a vehicle.
- When the trunk of a vehicle is opened or closed.
- When the ignition is turned on or off.

## Relay Outputs

As an electronic switch which can be opened or closed (Normally Open relay), a relay can be used to transmit an action to another device by signalling to that other device an "on" or "off". As a Normally Open relay, the circuit of the relay is disconnected (open) unless it is active. When the relay is active, the circuit is connected (closed).

- Setting off an alarm or siren.
- Triggering a process to start on another device.
- Opening or closing a valve or switch.



- Locking or unlocking a door.
- Turning a light on or off.
- Opening the vehicle's trunk or doors.

**Tip:** The relays are only capable of switching small loads. If you need a stronger signal, such as to open a door lock, you can connect the PinPoint XT's relay to a stronger solenoid relay which has enough power to cause the desired effect.

## Connecting devices to the I/O Port

*Note: Before you install the PinPoint XT in its final location, be sure to cover all exposed wiring.*

You can purchase an optional I/O Wiring Harness for the PinPoint XT which can be used to attach devices to the I/O port. The harness has pre-wired leads to allow you to customize your own connections. The wires are paired and color-coded.

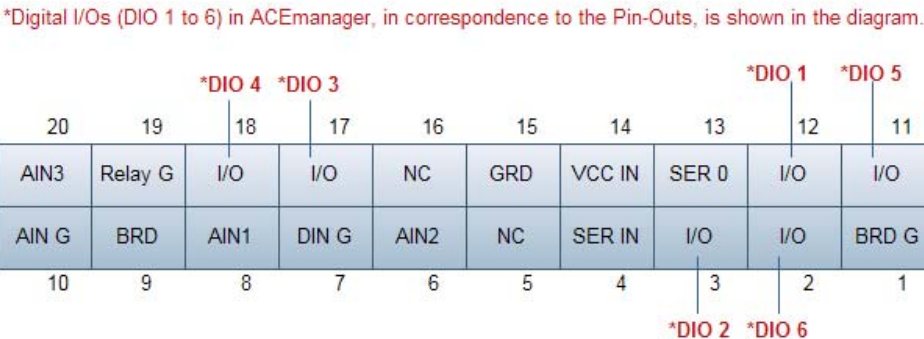
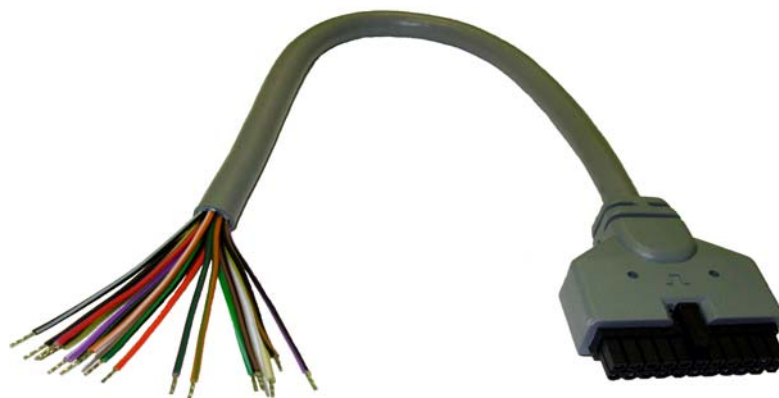


Figure 6-3: PinPoint XT I/O Port Diagram (not to scale)

**Table 2: Pin-out**

11 - Programmable I/O	1 - Board Ground
12 - Programmable I/O	2 - Programmable I/O
13 - Serial Out Rx (3.3V)	3 - Programmable I/O
14 - VCC IN (Input Voltage)	4 - Serial Input Tx (3.3V)
15 - Ground	5 - NC (No Connect)
16 - NC (No Connect)	6 - Analog Input 2
17 - Programmable I/O	7 - Digital In Ground
18 - Programmable I/O	8 - Analog In1 (IGT)
19 - Relay Ground	9 - Board 3.3V
20 - Analog Input 3	10 - Analog In GND

*Figure 6-4: I/O Wiring Harness, AirLink part number - 120-140-1022***Table 6-1: Wiring Color Corospondance**

1. NC	11. Green
2. Black	12. Blue
3. Brown	13. NC
4. NC	14. Red
5. NC	15. Black
6. Red	16. NC
7. Orange	17. Violet (I/O)

**Table 6-1: Wiring Color Correspondance**

<b>8.</b> White	<b>18.</b> Grey (I/O)
<b>9.</b> NC	<b>19.</b> White (I/O)
<b>10.</b> Yellow	<b>20.</b> Pink (I/O)

## Analog Inputs

Connect a wiring lead to an analog input (AIN) at 6, 8 or 20, and the ground at 10.

## Digital Inputs

Connect a wiring lead to a digital input (DIN) at 17, 18, 3, 2, 11 or 12, and connect ground at 15 and 7, as applicable.

---

**Caution:** *Never apply voltage to the Digital inputs. The inputs can only be switched open or closed to ground.*

---

## Relay Outputs

Connect the relay ground at 19.

## Serial Port

The I/O also has the ability to have a serial port connection and the serial port input is 4 while serial port output is 13. The signal levels on the serial lines are Transistor Transistor Logic (TTL) and need to be level-shifted to true RS-232 levels when attaching to a PC or other terminal device. The DC power & serial I/O cable supplied by Sierra Wireless (P/N 120-140-1021) integrates a level shifter into the RS-232 DB-9, and can be connected directly to a terminal device's COM port.

## Power Connection

In addition to the inputs and outputs, the I/O port connector is also the power connector. Connect the power to PIN# 14 and ground to PIN# 15.

## Power Modes and Information

The PinPoint XT can be configured to switch power modes in response to specific events, such as when the voltage to the modem drops below a configured threshold or when the DTR changes, in order to conserve a vehicle's battery life. The stand-by state, low-power mode, will prevent the modem from draining the battery while allowing the modem to quickly power up to regular operation when it is needed.

You can configure Low Power mode using ACEmanager.

The screenshot shows the PinPoint XT web interface. At the top, there is a navigation bar with tabs: Status, WAN/Cellular, LAN, VPII, Security, Services (selected), GPS, Serial, I/O, and Admin. Below the navigation bar, a status bar indicates 'Last updated time : 08-26-2009 17:58:33' and buttons for 'Apply', 'Refresh', and 'Cancel'. The main content area is divided into a left sidebar and a right configuration panel. The sidebar lists various configuration categories: ACManager, Low Power (selected), Dynamic DNS, Telnet, Email (SMTP), Management (SHMP), Time (NTP), and Logging. The right panel displays configuration options for the 'Low Power' section. It includes a table with checkboxes and input fields for various settings.

Configuration Option	Value
<input type="checkbox"/> <b>AT</b> Voltage Level Low Power Enable (.1 Volt)	0
<input type="checkbox"/> <b>AT</b> Low Power Mode Delay (Minutes)	0
<input type="checkbox"/> <b>AT</b> Standby Ignition Sense Enable	Disabled
<input type="checkbox"/> Engine Hours On Voltage Level (.1 Volt)	0
<input type="checkbox"/> Engine Hours Ignition Enable	Disabled

## Wiring the PinPoint XT for Ignition Sense or DTR Event Trigger

When the Standby Ignition Sense is enabled and the ignition sense connector is wired to your vehicle, the ignition sense will provide a link to the modem to enable it to enter a low-power using standby mode.

The white wire from the optional I/O harness on the I/O port (PIN#8) should be used to connect to your ignition.

## Power Effect on Modem State

Once the transition from powered on to standby, low-power mode starts, the modem will change state to AT mode. This results in the current mode being gracefully terminated. For the brief period when the modem is preparing for low-power mode, the modem will remain in AT mode. At that time, it won't auto-answer, ATD will fail, etc. Once low-power mode is entered, the modem will then discard any data received on the host port.

When the modem is woken from low-power mode, the same behavior occurs as upon power on. The modem starts in AT mode, and then after 5 seconds will enter the default start-up mode as it is configured for the modem.

## >> 7: Regulatory Information

## 7

### Federal Communications Commission Notice (FCC United States)

Electronic devices, including computers and wireless modems, generate RF energy incidental to their intended function and are therefore subject to FCC rules and regulations.

This equipment has been tested to, and found to be within the acceptable limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

This equipment generates radio frequency energy and is designed for use in accordance with the manufacturer's user manual. However, there is no guarantee that interference will not occur in any particular installation.

If this equipment causes harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are 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 the 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/television technician for help
- This device complies with Part 15 of the Federal Communications Commission (FCC) Rules. Operation is subject to the following two conditions:
  1. This device may not cause harmful interference.
  2. This device must accept any interference received, including interference that may cause undesired operation.

---

**Warning:** *Changes or modifications to this device not expressly approved by Sierra Wireless could void the user's authority to operate this equipment.*

---

### Industry Canada

This Class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. 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.

Cet appareillage numérique de la classe B répond à toutes les exigences de l'interférence canadienne causant des règlements d'équipement. L'opération est sujette aux deux conditions suivantes:

1. ce dispositif peut ne pas causer l'interférence nocive, et
2. ce dispositif doit accepter n'importe quelle interférence reçue, y compris l'interférence qui peut causer l'opération peu désirée.

## Antenna Considerations

Although the antenna model(s) used with these devices meet(s) the Industry Canada Radio Frequency requirements, it is possible that the future customers may swap them for different ones without network provider's knowledge and approval. Such customers must be made aware of, and follow, the Radio Frequency requirements applied in this Technical Approval:

- RSS-102 "Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)"
- RSS-129 "800 Mhz Dual-Mode CDMA Cellular Telephones"
- RSS-132e "Cellular Telephones Employing New Technologies Operating in the Bands 824-849 Mhz and 869-894 Mhz"
- RSS-133 r1 "2 GHz Personal Communications Services"

## RF Exposure

In accordance with FCC/IC requirements of human exposure to radiofrequency fields, the radiating element shall be installed such that a minimum separation distance of 20cm should be maintained from the antenna and the user's body .

---

**Warning:** *This product is only to be installed by qualified personnel!*

---

To comply with FCC/IC regulations limiting both maximum RF output power and human exposure to RF radiation, the maximum antenna gain must not exceed 5 dBi in the Cellular band and 4 dBi in the PCS band.

## EU

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*Note: At least 20 cm separation distance between the antenna and the user's body must be maintained at all times.*

---

Sierra Wireless hereby declares that the PinPoint XT devices conform to all the essential requirements of Directive 1999/5/EC.

Products are marked with a CE and notified body number as shown here:

The Declaration of Conformity made under Directive 1999/5/EC is available for viewing at the following location in the EU community.

Sierra Wireless

39677 Eureka Drive

Newark, CA

USA 94560

The device is a Class A device for use in commercial environment.

## WEEE Notice



If you purchased PinPoint XT in Europe, please return it to your dealer or supplier at the end of its life. WEEE products may be recognised by their wheeled bin label on the product label.





