Raven XE for AT&T

User Guide

SIERRA WIRELESS

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 modem are used in a normal manner with a well-constructed network, the Sierra Wireless modem 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 modem, or for failure of the Sierra Wireless modem to transmit or receive such data.

Safety and Hazards

Do not operate the Sierra Wireless modem 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 modem **MUST BE POWERED OFF**. The Sierra Wireless modem can transmit signals that could interfere with this equipment.

Do not operate the Sierra Wireless modem in any aircraft, whether the aircraft is on the ground or in flight. In aircraft, the Sierra Wireless modem **MUST BE POWERED OFF**. When operating, the Sierra Wireless modem can transmit signals that could interfere with various onboard systems.

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

The driver or operator of any vehicle should not operate the Sierra Wireless modem 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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Contact Information

Sales Desk:	Phone:	1-604-232-1488
	Hours:	8:00 AM to 5:00 PM Pacific Time
	E-mail:	sales@sierrawireless.com
Post:	Sierra Wireless 13811 Wireless Way Richmond, BC Canada V6V 3A4	
Fax:	1-604-231-1109	
Web:	www.sierrawireless.com	

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

www.sierrawireless.com

Contents

1: Introduction to the Raven XE

The Raven XE is an intelligent wireless gateway, powered by ALEOS™, and optimal for providing primary or backup network connectivity for any high-reliability/ high-availability applications.

The Raven XE is the perfect solution for any device with an Ethernet connection that requires pervasive connectivity including PCs, routers, network equipment and POS/ATMs as well as commercial automation equipment.

Powered by ALEOS™, Raven XE modems are designed to maintain a reliable, consistent network connection. Class I Divison 2 certified as nonincendive equipment, the Raven Series is ideally suited for use in hazardous environments.

Key applications include utilities, manufacturing, automation, oil and gas, ethernet-based SCADA, telemetry, Homeland Security and asset monitoring.

Figure 1-1: Sierra Wireless AirLink Raven XE

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
- 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.

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/.

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.

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

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 Raven XE activity which you can then send to Sierra Wireless support or erase the current configuration completely.
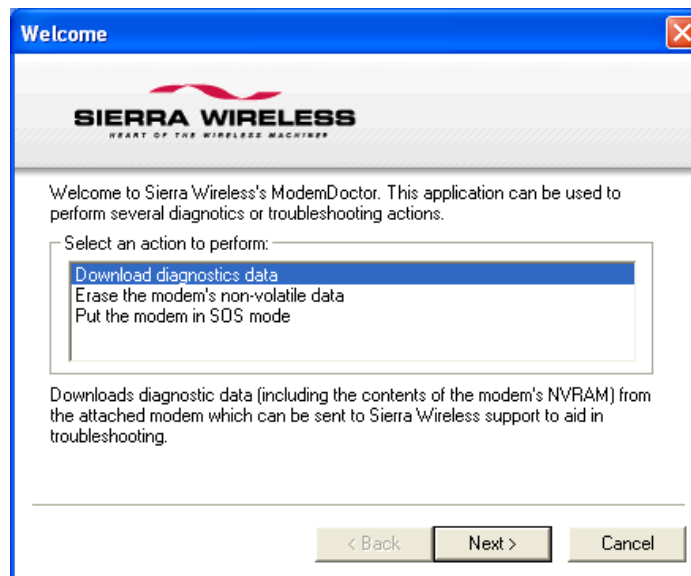

Figure 1-4: Modem Doctor

Connecting to AT&T

The Raven XE uses AT&T as an ISP (Internet Service Provider) to connect you to the Internet.

Steps of a connection:

1. Your Raven XE establishes a PPP (Point to Point Protocol or "dial" up connection) link to AT&T network, also called registering on the network, and receives an IP address.
2. When your Raven XE has received its IP address from AT&T, a connection to the Internet or the cellular network is also available for computers or other devices connected directly to the Raven XE.

The Raven XE will perform routing for all internet traffic to and from the computers or other end devicse.

With the Raven XE 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 Raven XE 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 Raven XE might not always receive the same address each time it connects with AT&T.
*   Static addresses are permanently assigned to a particular account and will always be used whenever your Raven XE 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).

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

If you need to contact your Raven XE, a device connected to the Raven XE, or a host system using the Raven XE 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.

Caution: *If you want to connect remotely to your Raven XE using TCP/IP, the IP address given to your modem by AT&T 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).*

Communication

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.

EDGE

EDGE (Enhanced Data rates for GSM Evolution) provides end-to-end packet data services with an enhanced connectivity building on GPRS technology and using the established GSM networks. EDGE provides higher transmission rates and better transmission quality for data than GPRS. EDGE can carry data at speeds typically up to 384 kbit/s in packet mode.

When EDGE is not available, your Raven XE will fall-back to GPRS for the connection to AT&T to provide continued connectivity.

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 Raven XE to a USB or a Ethernet (RJ45) on a computer. When connected to a USB or Ethernet port, the Raven XE behaves like a network card.

USB

The Raven XE 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 Raven XE and connect directly to your computer for best throughput.

Virtual serial port

The Raven XE 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.
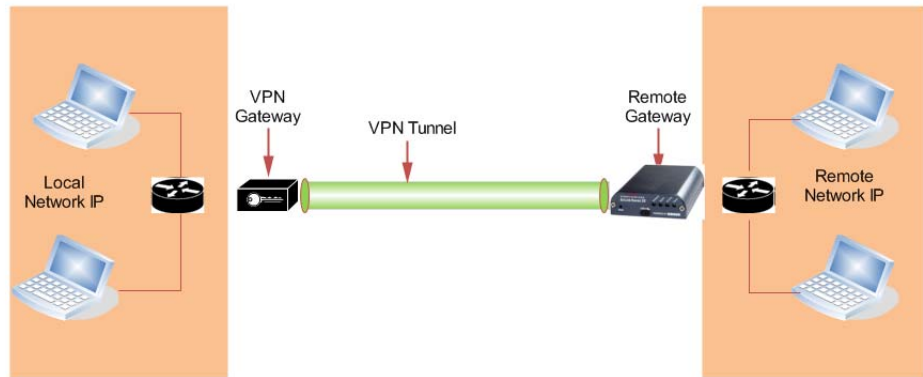
Figure 1-5: IPSec Architecture

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 is Sierra Wireless AirLink's modem's new software feature provided via ACEmanager, that 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.

Software

The Raven XE modem comes with the following software:

- AceView, the software for the Raven XE which allows you to monitor your connections.
- The driver that forms the interface between the Raven XE 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 Raven XE 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 Raven XE and one on the radio module.

    The firmware was loaded into the radio module and controller board when the Raven XE was assembled. As new versions of the software and firmware are released, they are posted at www.sierrawireless.com.

Documentation

This *Raven XE User Guide* describes how to:

- Install the Raven XE hardware.
- Connect the radio antennas.
- Connect a notebook computer and other input/output (I/O) devices.
- Interpret the LEDs on the Raven XE 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.

Tools and Reference Documents

User Guide	Description
ALEOS User Guide	This document discusses software configuration in ACEmanager and explains all the ALEOS features.
ACEview User Guide	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.
ACEnet User Guide	This document explains the use of ACEnet services for remote management of Sierra Wireless AirLink device.

2: Specifications

• Power Connector

Features and Benefits

- Embedded Intelligence
- Low Power Consumption
- Compact Size
- Rugged Aluminium Case
- High-Speed Processor (ARM 9)
- High-Speed 2-way Data
- 10/100 Mbps Ethernet Port
- Persistent Network Connectivity
- Remote Management and Configuration
- Class I Div 2 Certified

Technology

- HSUPA

  With Fallback to:
  - HSDPA
  - UMTS
  - EDGE
  - GPRS (MS-12)
  - GSM

Bands

- TriBand for UMTS/HSDPA/HSUPA
  - 850/1900/2100 MHz
- Quad Band GPRS/EDGE
  - 850/900/1800/1900 MHz

Environmental

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

Power Consumption: (@12V DC)

- Transmit (Typical/Max) 110/265 mA
- Idle 80 mA
- Input Current 75 mA to 265 mA
- Input Voltage 9 - 28V DC

Standards/Approvals

- Carrier specific approvals
- CE (Class A device per EN55022)
- RoHS
- FCC
- Industry Canada
- PTCRB
- This apparatus is suitable for use in Class I, Division 2, Groups A, B, C, D or unclassified or non-hazardous locations.

Warning: *Explosion Hazard - Substitution of any components may impair suitability for Class I, Division 2.*

Note: In consideration of EU regulations, this device is classified as Class A device for use in commercial environments.

Host Interfaces

- Ethernet: 10BaseT RJ-45
- USB Type B 5 Pin mini
- Antenna Connection:
  - Cellular - 50 Ohm SMA
  - Receive Diversity - 50 Ohm SMA
  - I/O Ports: 2

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.*

Dimensions

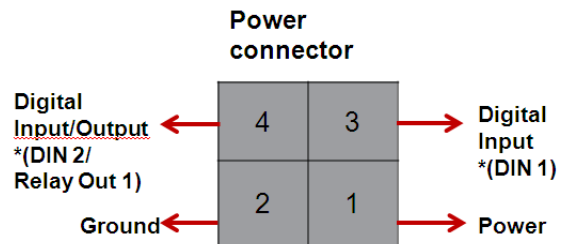- 75mm x 27mm x 103mm
- 185 grams

Application Interfaces

- TCP/IP, UDP/IP, DHCP, HTTP, SNMP, SMTP, SMS, MSCI, Modbus and more

LED Indicators

- Network
- Signal
- Activity

- Power
- Reset Button

Power Connector

* Configuration terminology in ACEmanager

Figure 2-1: Power Connector (not to scale)

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

Note: Raven XE I/O Port 4 is software configurable.

3: Activating Raven XE on AT&T

This chapter provides step-by-step directions for activating your Raven XE on AT&T's network.

"

Installing the SIM

The Subscriber Identity Module (SIM) in the Raven XE 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, unless you need to set a custom APN, 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 in a data plan, with your cellular provider (EDGEor HSUPA/HSDPA).

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

- **Ethernet cable** - An Ethernet cable is required.

Note: Until you install a driver for the USB port, you cannot use your USB port to configure the modem.

- **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 Ethernet portserial port.

Tools Required

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

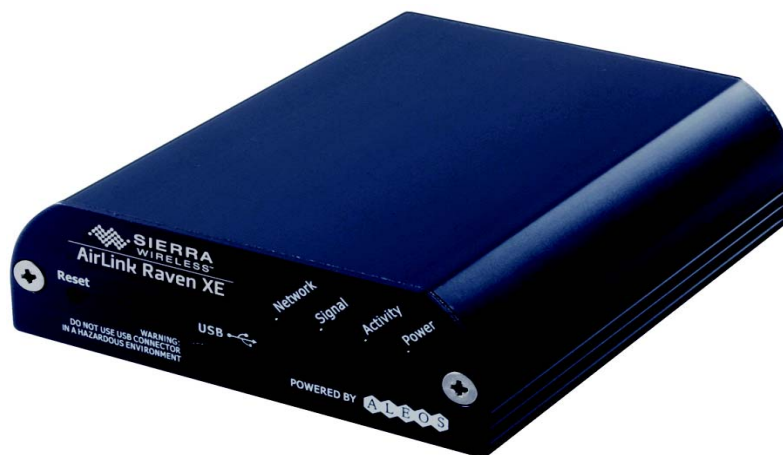- **Slim stylus** - A PDA stylus, an unbent paperclip, or other such item.

Figure 3-1: Faceplate

Warning: *Explosion Hazard. Do Not remove or replace Plug-in Modules unless power has been disconnected or the area is known to be free of ignitible concentrations of flammable Gasses or vapors.*

1. Opening the Case
    a. Unplug the Raven XE power and all cables.
    b. Using a small phillips head screw driver, remove the screws on the back of the Raven XE.
2. Remove the SIM from the card
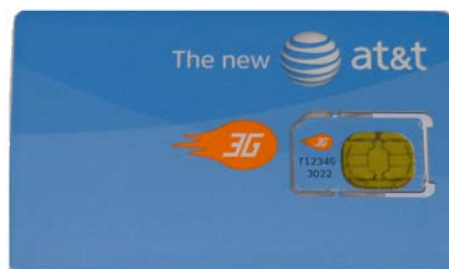   a. Carefully remove the SIM card from the card you received from AT&T.

Figure 3-2: Sample of the SIM card

3. Insert the SIM
    a. Gently press the SIM card to click it into place.

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

Figure 3-3: Insert SIM in to the modem

4.   Finishing the SIM installation

When the faceplate is replaced and secured, the installation of the SIM is complete. Secure the front of the Raven XE with the screws.

Configuring the APN

The APN (Access Point Name) is the way your modem 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.

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.

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

4: Hardware Installation of the Raven XE   **4**

- 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 Raven XE 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 Raven XE 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 Raven XE can withstand.*
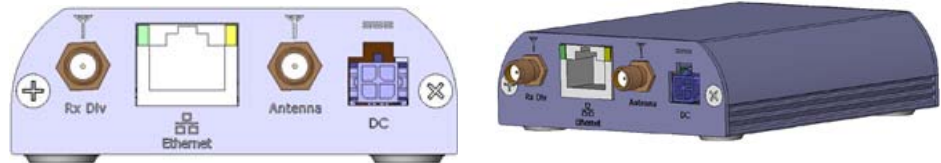

Figure 4-1: Raven XE Connectors

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

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 Raven XE will work with most PCS cellular antennas with a SMA connector that works in the high and low frequencies of the cellular technology of your modem. Connect the primary antenna or primary RF cable directly to the antenna connector on the back of the Raven XE.

Note: Use of receive diversity for EV-DO is optional. Data transmission and reception may be adversely affected if it is not used.

To provide for diversity in the signal reception, connect the second antenna to the second antenna port (SMA, labeled Rx Div ANT2) on the back of the Raven XE.

Connecting to Power

The Raven XE digital I/O port consists of a 4 pin power connector, which includes two digital I/O ports. Port 4 is software configurable, while port 3 is Digital Input only and not software configurable.

This I/O port handles external input and output events. An external device can send digital input to the modem, through the digital I/O port.
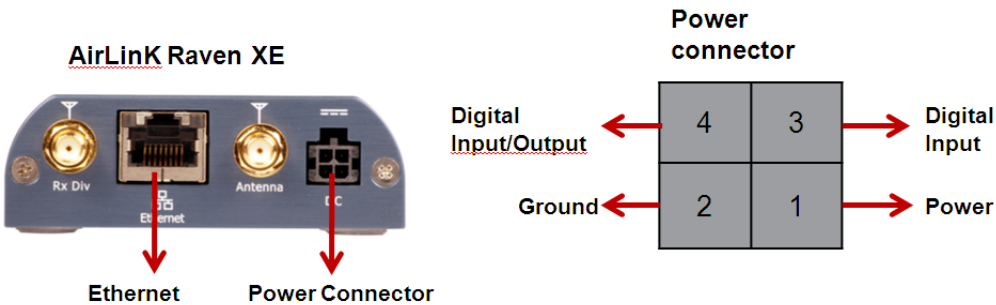

Figure 4-2: Digital 1/0 Port: Power Connector

Your Raven XE 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 Raven XE.

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.

Tip: *The DC power cable has a white wire lead in addition to the power positive and negative. This is for a feature not present in the Raven line modems. In the Raven XE, the white wire lead has no function and can be ignored.*

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: Ethernet

The Ethernet port of your Raven XE can be connected directly to a computer or other Ethernet device with either a cross-over cable or a straight-through cable. The Ethernet port on the Raven XE is auto-sensing and connects at 100baseTX. If you are connecting the modem to a hub or switch you should use a straight through cable or use the uplink port on the hub or switch with a cross-over cable.

Tip: *On some computers, the TCP receive window may be set to 16 kbytes. To optimize the throughput of your Raven XE, it is recommended that you change the TCP window to 128 kbytes to 256 kbytes using a TCP Optimizer.*

Figure 4-4: USB

Your Raven XE'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 Raven XE 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 Raven XE has a standard mini-B connector.

Warning: *The USB port can only be used in a non-hazardous environment.*

Indicator Lights

When your Raven XE is connected to power and an antenna, there is a specific pattern to the lights to indicate its operation mode.

Figure 4-5: Raven XE Indicator lights

- **Network** - Indicates a successful connection to the cellular network with an IP address given and a channel acquired.
- **Signal** - Light shows the strength of the signal and may be nearly solid (strong signal) or flashing (weaker signal). A slow flash indicates a very weak signal.

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

- **Activity** - Lights will flash as data is transferred to and from the Raven XE on the remote network.

- **Power** - Indicates the power adapter is connected and there is power getting to the Raven XE.
- The **Reset button** (on the left side of the Raven XE) has two functions. If it is quickly depressed and released, the modem will simply power cycle the internal hardware. If, however, the reset is depressed and held for several seconds (count approximately 30 seconds, and wait for the power light to go off after the light pattern stops), the ALEOS configuration settings will return to the factory defaults.

Caution: *If you reset the modem configuration using the reset button, you may to reconfigure your APN.*

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.
- **Configuration Reset** - The LEDs will cycle left to right and then right to left 4 times.
- **Authentication Failure** - The Network, Signal, and Activity LEDs blink every 2 seconds.
- **Data Retry** - The Network, Signal, and Activity LEDs blink every 3 seconds.

Mounting

An optional accessory for your Raven XE 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 Raven XE between Alignment ears.
3. Engage top groove in body of Raven XE with two tabs.
4. Push on far side of Raven XE in center so that it touches side of Bracket.
5. Press down and release when upper groove on far side of Raven XE, 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.
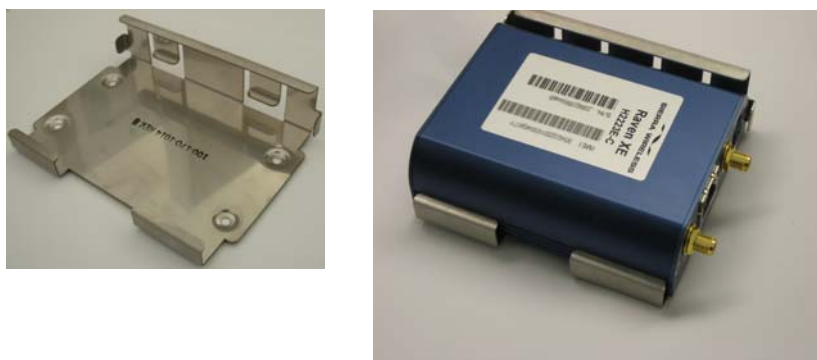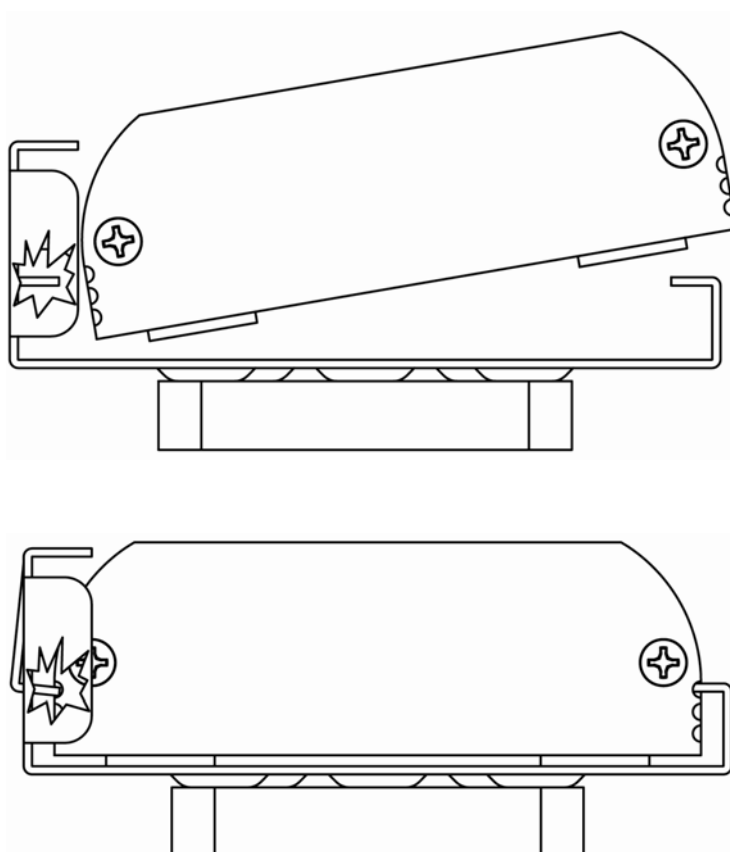
Figure 4-6: Optional Mounting Bracket

Figure 4-7: Mounting bracket installation

3.24

0.40

1.06

0.2 TYP.
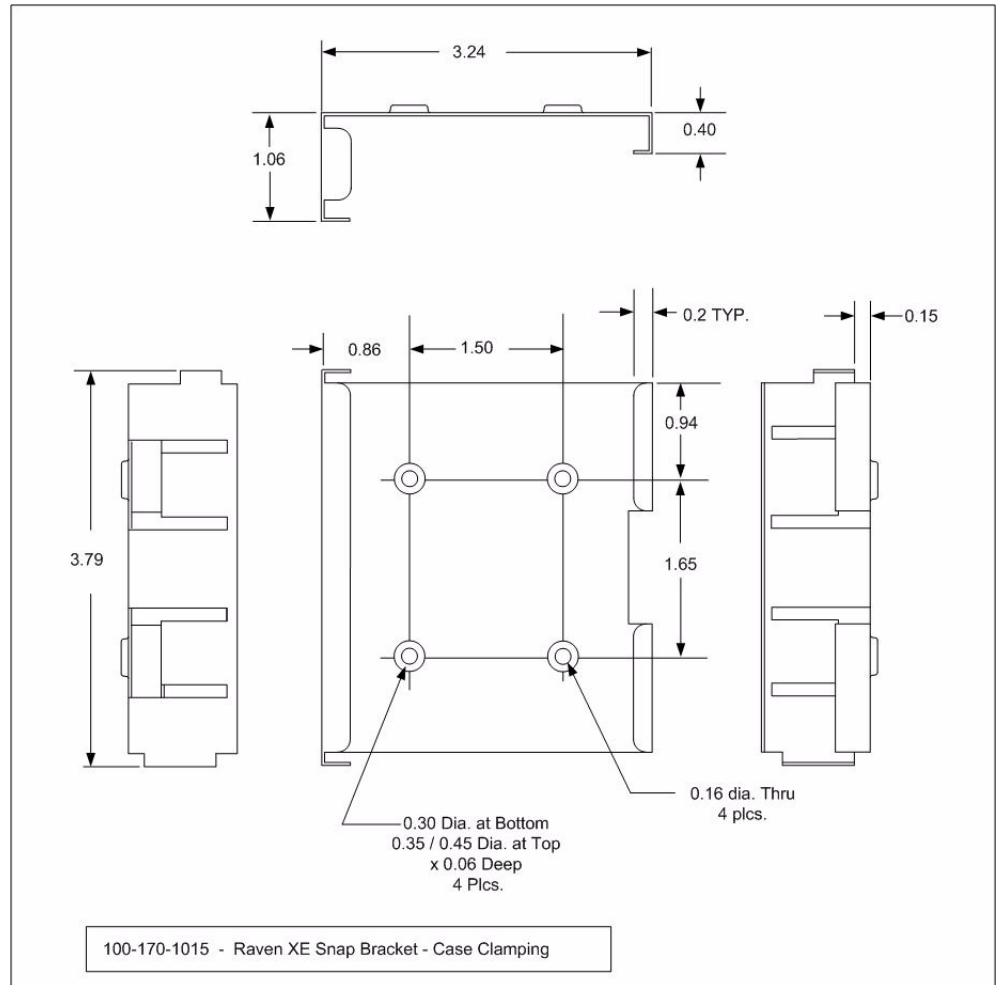
0.15

0.86   1.50

0.94

3.79

1.65

0.16 dia. Thru
4 plcs.

0.30 Dia. at Bottom
0.35 / 0.45 Dia. at Top
x 0.06 Deep
4 Plcs.

100-170-1015 - Raven XE Snap Bracket - Case Clamping

Figure 4-8: 100-170-1015 : Mounting Bracket for Raven XE

5: Connecting the Raven XE

With ALEOS as its "brain", the Raven XE is a highly configurable device.

To configure your Raven XE, 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 you modem are in Chapter 6.

Using a Terminal Application with AT Commands

You can access and configure your Raven XE 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 *Raven XE* 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. Raven XE local.*

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    b. Select O*K*.

    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
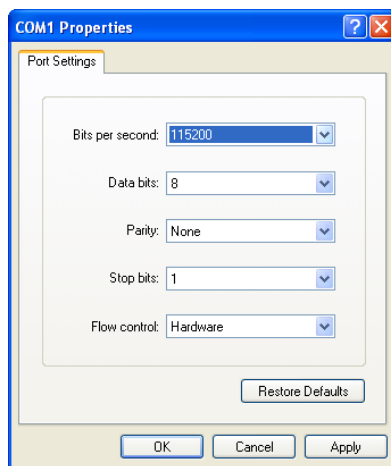- Parity: None
- Stop Bits: 1
- Flow Control: Hardware.

Figure 5-2: Port Settings

Tip: *If you have configured the Raven XE 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 O*K*.

Using Ethernet:

    d.   Select *TCP/IP (Winsock)* for "Connect Using".

    e.   Change the "Port Number" to *2332*.
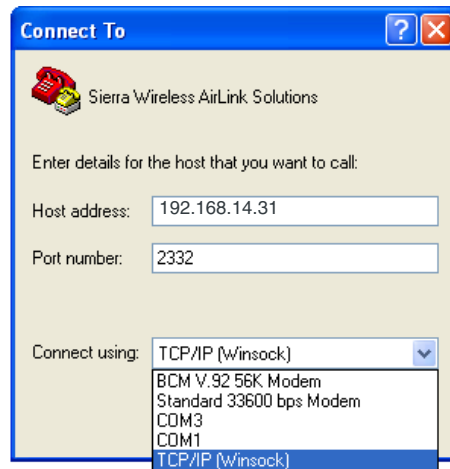
f. Select O*K.*

3. Connected

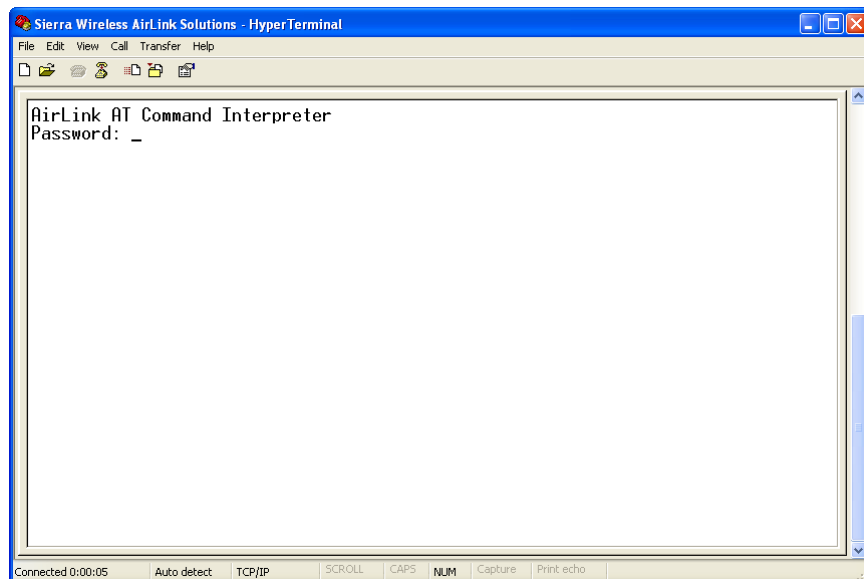Connecting on USB/net will prompt for password.
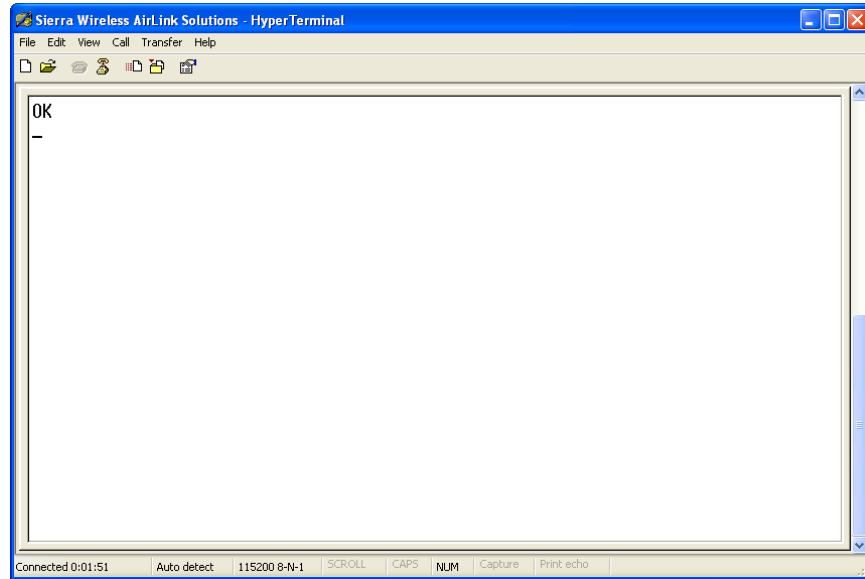

Figure 5-3: HyperTerminal : TCP/IP connected

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, D*n*. 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 Raven XE, 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 Raven XE 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: Regulatory Information

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

Sierra Wireless hereby declares that the Raven XE 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:

$C \epsilon$ 0682

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 Raven XE 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.