



Redwing GPRS

User Guide



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WARNING

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

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Hardware: All equipment is warranted for one year after delivery to conform with AirLink's specifications and be free from manufacturing defect. Optional warranty extensions can be purchased for two and four years which would increase the warranty period to three and five years respectively. If under normal use, the hardware proves to have any such defect and the Customer notifies AirLink of such defect within the warranty period, AirLink, at its option, will either repair or replace the same without charge but only upon written authorization and in accordance with instructions of AirLink using a Return Material Authorization ("RMA") process (details of the process are in the full warranty statement).

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Introduction to Redwing GPRS

The Redwing's rugged form factor is ideal for industrial and commercial applications that require real-time communications. The Redwing provides cellular data communications for a variety of applications, such as telemetry, public safety, SCADA, traffic control, traffic metering, transit arrival systems and more.

FIGURE 1. Redwing front and back



GPRS Overview

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.

Establishing an Internet Connection

The Internet Service Provider (ISP) from you to the Internet is Your Wireless Service Provider with your Redwing as the connection to Your Wireless Service Provider.

***Steps of a connection:***

1. When your Redwing is powered on, it automatically searches for cellular service using GPRS.
2. Your Redwing establishes a PPP (Point to Point Protocol or “dial” up connection) link to Your Wireless Service Provider’s network, also called registering on the network, and receives an IP address from Your Wireless Service Provider.
3. When your Redwing has received the IP address from Your Wireless Service Provider, then it is ready to allow communication to the cellular network.

To use your Redwing’s serial port to connect to the Internet from your computer, you need to connect the computer directly to the Redwing’s serial port and use Dial-Up Networking (DUN).

FIGURE 2. Using the Redwing to connect to the Internet

**Using the GPRS Network**

As stated above, when your Redwing registers on the Your Wireless Service Provider network, it receives an IP address. There are two types of addresses on networks: dynamic and static.

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

How your Redwing gets its IP Address from Your Wireless Service Provider

The APN (Access Point Name) defines the network that is accessible with your .

APN (Access Point Name)



With GPRS, you can choose a type of Access Point which most suits your needs. Your Wireless Service Provider can set up your account so you are able to have a Private IP address, a Public IP address, a static IP address, or even a custom IP address which essentially extends your company's local area network to include the Your Wireless Service Provider network. The Access Point is the link to the type of network with the Access Point Name (APN) as the gateway. It sets up the DNS and other configurations needed to communicate on that network.

For most accounts, the default "Internet APN" is the connection you will need and want to configure for your . Contact Your Wireless Service Provider to find out if your account is set up differently or uses a different APN.

Private network connections are unique for each configuration and not covered as part of the standard installation.

Dynamic vs Static IP Addresses

If you need to contact the Redwing, a device connected to the modem, or a host system using the Redwing 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).

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).



Note: If you have a dynamic IP address for your Redwing, you will not be able to contact the modem using a name.

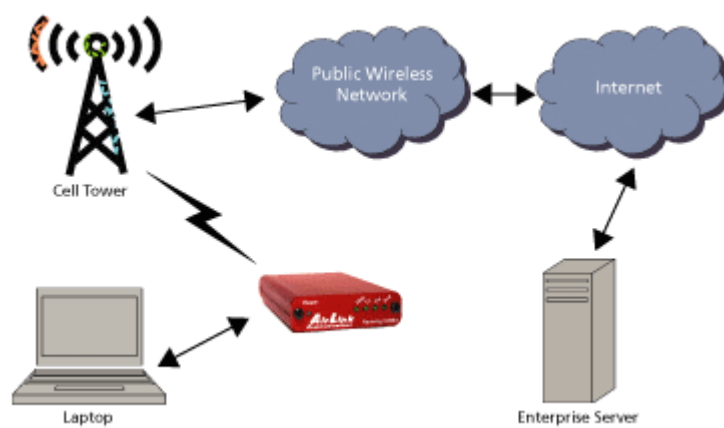


Caution: The IP address given to your Redwing by Your Wireless Service Provider must be Internet routable if you do not have a direct connection to the Your Wireless Service Provider's network (example, using frame relay).

Common Uses for the Redwing

The Redwing's rugged construction and cellular connection make it ideal for use in remote and/or industrial locations.

The Redwing is designed to work with legacy devices which do not need the advanced features of ALEOS.

**FIGURE 3. Remote Internet Access**

Activating the Redwing

The SIM (Subscriber Identity Module) card in the Redwing is a smartcard securely storing the key identifying a mobile subscriber. Generally, you will only need to install the SIM once in the life of the modem and it may be pre-installed by AirLink.



Note: If the SIM card was pre-installed by AirLink, unless you need to set a custom APN, there is nothing more you need to do, activation of your modem is complete.

Installing the SIM

To install the SIM, you will only need a small phillips head screw driver.

1. Opening the Case

- a. Unplug the Redwing's power and all cables.
- b. Using a small phillips head screw driver, remove the screws on the back of the Redwing.
- c. Slide the casing off of the Redwing and set it aside.

FIGURE 1. Redwing back

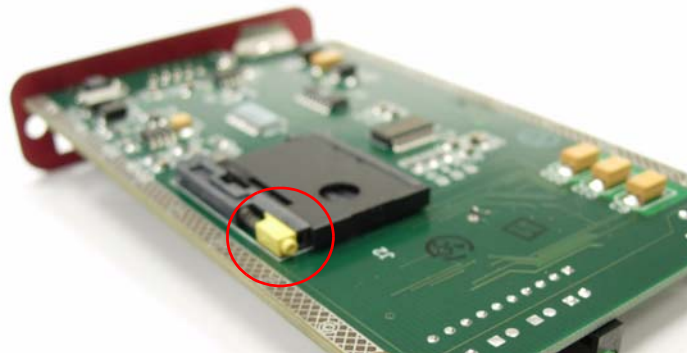


2. Ejecting the SIM tray



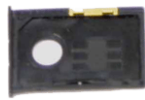
- a. Using the tip of a PDA stylus, an unbent paperclip, or other slim *blunt* item press the yellow button of the SIM tray. On the Redwing, the button is on the bottom of the main board.

FIGURE 2. Tray button: Redwing



- b. Slide the tray out of the slot.

FIGURE 3. Empty SIM Tray



3. Inserting the SIM

- a. Place the SIM into the tray and gently press to click it into place.

FIGURE 4. SIM Tray with a SIM



The SIM may be a different color than this example.

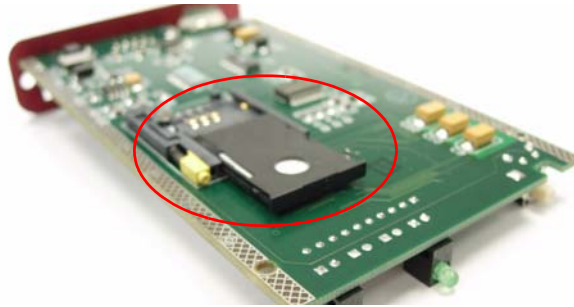
- b. Slide the tray back into the modem and gently press to click it into place.



Note: The top of the card faces the the bottom of the modem.



FIGURE 5. Inserting the SIM: Redwing



4. Finishing the SIM installation

- a. Slide the Redwing back into the case.
- b. Secure the back of the Redwing with the screws.

Hardware Installation

Your AirLink Redwing should be mounted in a position that allows easy access for the cables so they are not bent or constricted. 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 (sun, rain, etc.)

An optional accessory for your modem is a mounting kit. The bracket is designed to snugly cradle the modem and hold it in place where you need it. See “Mounting Kit” on page 12.



Modem placement with grounding information and diagrams can be found in the Appendix, “Modem Placement” on page 56.

Connecting the Antenna

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 FCC's, Industry Canada's, or your country's radio communications regulatory body's regulations.

Your AirLink Redwing will work with most Dual-Band PCS cellular antennas with a TNC connector that works in the high and low frequencies of GPRS. Connect the antenna or RF cable directly to the TNC connector on the back of the Redwing.

FIGURE 1. Redwing connectors



Connecting power



Your Redwing can be used with either DC (available in most automobiles) or 110 AC (standard US wall power) with the appropriate power adapter (available from AirLink).

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



Note: When using a DC power source (such as a car battery or solar cell), AirLink recommends placing a fuse on the line close to the power source to protect your power source from possible surges due to shorts or other line issues.

Connecting the Redwing to a computer or other device

Your Redwing's serial port can be connected directly to most computers or other devices using a standard straight through cable. If you have a DCE device, you will need a null modem or null modem cable.

Your Redwing can also be connected to a USB to serial device connected to a computer or other device which does not have an available serial port but does have USB.

Redwing Indicator Lights

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

FIGURE 2. Redwing indicator lights



Net (network) - Indicates when there is traffic on the network.

Pwr (power) - Indicates the power adapter is connected and there is power getting to the modem.

The **Reset** button performs the same function as unplugging power from the modem and plugging it back in. Reset will not alter any saved configuration settings.

Specifications for the Redwing GPRS

Physical Characteristics:

- Weight: < 1 lb .
- Size: 3" x 1.1" x 5.1"
- RF Antenna Connector: 50 Ohm TNC
- Serial Interface: RS232 DB-9F with 1200-115200 bps

Data Services & RF Features:

- Network: 1900/850 MHz GPRS
- Transmit frequency: 1850-1910 MHz and 824-849 MHz
- Transmit power range at antenna port: 1.0 W for 1900 MHz and 0.8W for 850 MHz
- Transmitter can reduce output power when near a base station as per GSM specifications
- Receiver frequency: 1930-1990 MHz and 869-894 MHz
- Receiver sensitivity: typical -107 dBm (2.439% bit error rate)
- Multislot Class 8
- Circuit Switched Data Capable (14,400 Transparent and Non-Transparent Modes)

Environmental:

- Operating ranges: -30°C to +70°C
- Humidity: 5%-95% Non-condensing

Power Management:

- Low power consumption
- Dormant connection (idle for 10-20 seconds): 20 mA at 12 VDC
- Input Voltage: 10 VDC to 28 VDC
- Input Current: 20 mA to 350 mA
- Typical Receive: 120mA at 12VDC
- Typical Transmit: Approximately 120 mA at 12VDC



Power consumption

Modem	Idle	Transmitting
Redwing	50 mAh	200-300 mAh

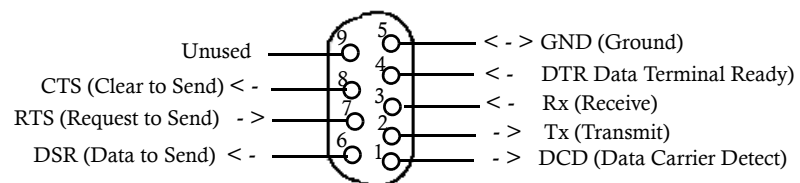
Short Message Service (SMS):

- Send and Receive
- Notification of new messages

Serial Port Pinouts

The cable between the Redwing and a computer or other serial device needs to be wired straight-through (pin 1 goes to pin 1, pin 2 to pin 2, etc.). If your end device connected to the Redwing is a DCE device, you will need a null-modem cable.

FIGURE 1. Serial Port Diagram : Female DB-9 DCE (not to scale)



Mounting Kit

An optional accessory for your modem is a mounting kit. The bracket is designed to snugly cradle the modem and hold it in place where you need it.

The Redwing “snaps” into place in the bracket locking into the grooves on the Redwing case. The bracket can be further secured with a twist-tie set into the grooves on the top for situations where the Redwing may be subjected to violent movement, such as in the back of an automobile. In most stationary installations, such as in a field or pipe, the Redwing and bracket shouldn’t require a twist-tie.

The bracket can be attached to the location using #6 screws (mounting hole diameter approximately 0.150").

FIGURE 1. Mounting Bracket

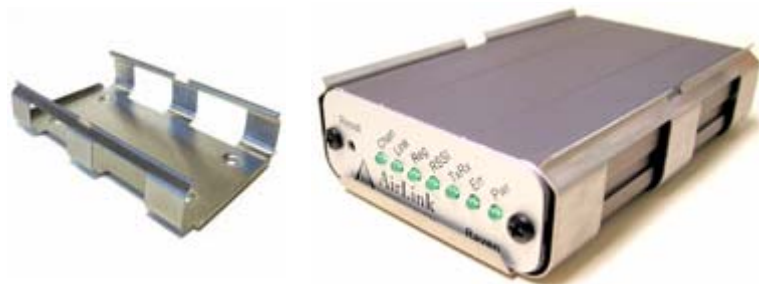
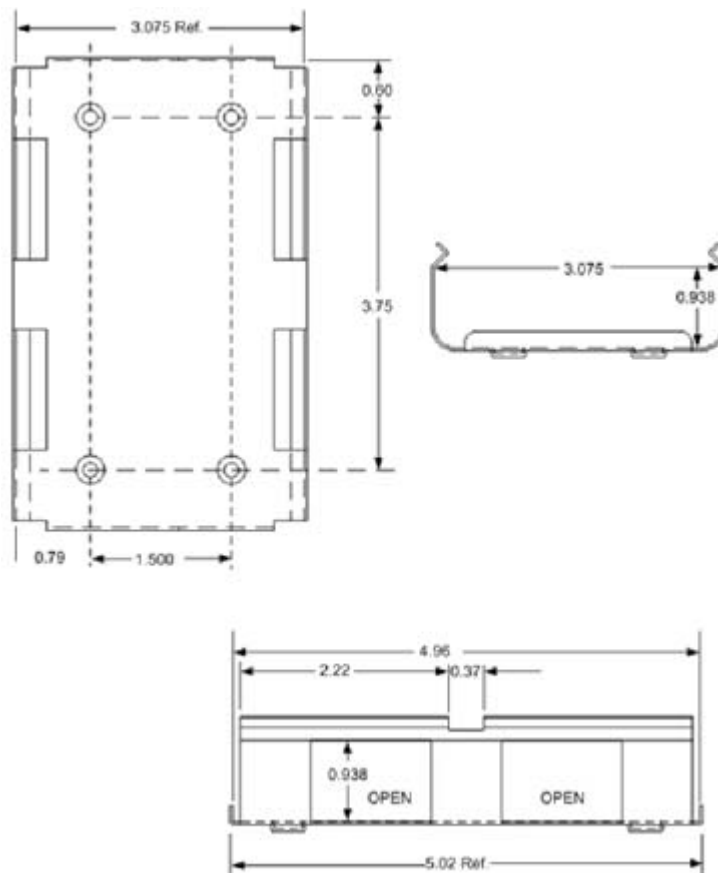




FIGURE 2. Redwing Mounting Bracket, part number 100-170-1009 A



AT Commands

Just as with a Hayes compatible analog modem, the Redwing parameters can all be configured with AT commands.



Direct Serial Connection

Direct Serial Connection

Using HyperTerminal, included with most installations of Microsoft Windows:

Start>All Programs>Accessories>Communications>HyperTerminal

1. Choose a name for your connection, such as **Redwing** or **AirLink** (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. Redwing local). The name and icon are only for your own reference so you can find the connection at a later date.

FIGURE 1. HyperTerminal: Connection Name

Enter a name and choose an icon for the connection:

Name:

AirLink

2. Select COM1 (or the comport to which the modem is connected) for the **Connect Using**.

FIGURE 2. HyperTerminal: Comport Setting

Connect using: COM1

3. Change the **Bits per Second** to 115200 (default), **Data Bits** to 8, **Parity** to None, **Stop Bits** to 1, and **Flow Control** to Hardware.



Note: If you have configured the Redwing 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.

FIGURE 3. HyperTerminal: Comport Settings

The image shows a screenshot of the 'Comport Settings' dialog box in HyperTerminal. It contains five settings, each with a label and a dropdown menu:

- Bits per second:** 115200
- Data bits:** 8
- Parity:** None
- Stop bits:** 1
- Flow control:** Hardware

4. Type **AT** and press **Enter**. You should get a reply of “OK” or “0”.
5. 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**.
6. 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.

Using AT Commands with a Terminal Application

- The following pages list the AT commands, their parameters, and explain what they do. 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 listed as **A**.
- Some commands have specific parameters while other commands will take whatever you type.
- Acceptable parameters and/or specific formats are in the parameters column.
- Required variable parameters are denoted with italicized text, example, *Dn*. The *n* is variable and noted in the parameters column.
- Optional parameters are denoted with square brackets [].
- 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).
- 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 Redwing, 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 Redwing will be noted.



Caution: Symbols listed with commands, such as **/**, **&**, or **?**, are part of the command and must be included.

- The commands are alphabetical within their groups.



AT Command Listing

Symbols

&C	21
&D	21
&F	22
&S	22
&V	17
&W	22
*NETAPN	23
+++	18
+CCID	17
+CGDCONT	23
+CGQMIN	23
+CGQREQ	23
+CIMI	17
+COPS	23
+CSQ	17
+CSSN	17
+ICCID	17
+RCIQ	17
+WHWV	17
+WSSW	17

A

A	18
A/	18

D

D	18
---	----

E

E	19
---	----

H

H	19
---	----

I

I	17
---	----

O

O	19
---	----

Q

Q	19
---	----

S

S10	20
S23	20
S3	19
S4	19
S5	19
S53	20
S6	19
S8	20
S9	20

V

V	21
---	----

X

X	21
---	----

Z

Z	21
---	----



Information and Status

Most of the commands in the “Info” and “Status” groups as well as other groups have read-only parameters. They only provide information, but cannot be changed or cannot be changed using Wireless Ace.

I[n]

n=0 The modem's internal hardware.

n=3 The hardware module's unique ID (ESN).

n=5 View active profile (the contents of the active registers).

&V

View active profile (the contents of the active registers).

+CCID

Subscriber Identity Module ID

+CIMI

International Mobile Subscriber Identity

+CSQ

Received Signal Strength and Channel Frame Error Rate.

+CSSN?

Serving System.

+ICCID

Subscriber Identity Module ID

+RCIQ

Current Cell Info

+WHWV

Serial number of the module.

+WSSW

Software version of the internal hardware module.



Serial

This group includes commands specific to the serial port.

+++



Note: This command is not preceded by AT.

There must be an idle time (set by **S50**) on the serial port before and after this command.

The “+” is ASCII 0x2B.

AT Escape sequence.

If the Redwing is in a data mode (any mode other than PassThru), this command causes the modem to re-enter AT command mode.



Note: This command does nothing if DAE=1.

A/



Note: This command is not preceded by AT.

Re-execute last command.

A

Answer - manual

D[method][d.d.d.d][/ppppp] or **D[method][@name][/ppppp]**

Dial a connection to a remote IP and Port using *method*.

method=**P** : Establish a UDP connection

method=**T** : Establish a TCP connection

method=**N** : Establish a Telnet connection

d.d.d.d=IP address to contact

ppppp=IP port to contact

Examples:

ATD - Dial (establish) default connection.

ATDP192.168.13.31/2332 - Dial (establish) UDP session to 192.168.13.31, at port 2332.

To end the connection, issue the +++ escape sequence or drop the DTR line (if Ignore DTR **S211=0** or **&D2**).

The default connection is set in **S53**.

**En**

Toggle AT command echo mode.

n=0 : Echo Off

n=1 : Echo On

Hz

Hang-Up Command.

n=1: Hang-up

With an AT telnet connection, this command will terminate the host data mode and return the Redwing to an AT mode.

O

Online (Remote): Causes the Raven to go from Command State to data state.

Qn

The AT quiet-mode setting. If quiet mode is set, there will be no responses to AT commands except for data queried.

n=0 : Off (Default)

n=1 : Quiet-mode on

S3=n

Carriage Return Character

n=0-127 (ASCII character number)

The standard end of line character used to indicate the end of an AT command. This character is also used as the carriage return character for framing responses and result codes in command state.

S4=n

Line Feed Character

n=0-127 (ASCII character number)

The standard line feed character sent by the modem to the host at the end of a response or return code in command state.

S5=n

Backspace Character

n=0-127 (ASCII character number)

This register sets the character recognized as a backspace during command entry.

S6=n

Wait for Blind Dial



$n=2-10$ seconds

This register denotes the wait time, in seconds, before a blind dial (no dial tone detection).

S8= n

Comma Pause Time (Dial Modifier)

$n=0-255$

Whenever a dial command contains the comma character, the contents of this register specify the pause time for each comma.

S9= n

Carrier Detect Response Time

$n=0-255$

Specifies the time that the received carrier must be present for the modem to recognize it and turn on Data Carrier Detect (DCD) if applicable. The implementation is entirely at the IWF modem.

S10= n

Lost Carrier Hang-up Delay (Remote)

$n=1-2545$

Specifies the amount of time that the carrier from the remote modem can be lost before the modem goes on-hook. This allows temporary disruptions to carrier without disconnecting.

A setting of 255 causes the modem to disable Carrier Detect and presume carrier is always present.

S23=[*speed*],[*databits*][*parity*][*stop bits*]

Serial line parameters. The settings take affect after reset.

speed=300 | 1200 | 2400 | 4800 | 9600 | 19200 | 38400 | 57600 | 115200 | 230400

databits=7 or 8

parity=**O** : Odd

parity=**E** : Even

parity=**N** : None

parity=**M**: Mark

stopbits=1 | 1.5 | 2

Example: **ATS23=19200,8N1** (sets modem to 19200, etc.)

Can also be set using **&L**=[*speed*],[*databits*] [*parity*][*stop bits*]



Note: Databits MUST be 8 data bits for PPP mode.

S53=[*method*][*d.d.d.d*][*/ppppp*]



Destination IP address, port, and method. These are used as defaults for the D (Dial) AT command.

method= **P** : UDP

method=**T** : TCP

method=**N** : Telnet

d.d.d.d=IP address or name

ppppp=the port address

Examples:

ATS53=T192.168.100.23/12345

ATS53=foo.earlink.com

Telnet to the specified IP at port 12345.

ATS53=192.168.100.23/12345

Query the specified IP at port 12345.

ATS53=/12345

Query port 12345.

Vn

Command Response Mode.

n=**0** : Terse (numeric) command responses

n=**1** : Verbose command responses (Default).

Xn

Extended Call Progress Result mode.

n=**0** : Turn off extended result codes (Default).

n=**1** : Turn on result codes. This adds the text 19200 to the CONNECT response.

Z

Reset the Redwing.

&Cn

Set DCD mode.

n=**0** : Always assert DCD.

n=**1** : Assert DCD when in a data mode (UDP, TCP, PPP, or SLIP) (Default).

n=**2** : Assert DCD when the modem has network coverage.

&Dn

Set DTR mode.

n=**0** : Ignore DTR, same effect as HW DTR always asserted (same as S211=1).

n=**2** : Use hardware DTR (same as S211=0).

**&F**

Restore Factory Settings of the AT register of the internal hardware.

&Sn

Set DSR mode.

n=0 : Always assert DSR.

n=1 : Assert DSR when in a data mode (UDP, TCP, PPP, or SLIP) (Default).

n=2 : Assert DSR when the modem has network coverage.

&W

Writes all changed modem settings. If this command is not issued, any modified values will revert back to their previous values at modem reset.



GPRS

This group includes commands specific to GPRS.

+CGDCONT=1,"IP","apn"

Easy entry of the APN.

apn=access

If left blank, the modem will attempt to use the default subscriber value as defined by the account.



Note: **1** and **"IP"**, are required and not variable. Quotes need to be placed around the APN.

When ***NETAPN** has been configured, **+CGDCONT** will be prepopulated in Wireless Ace.

+CGQMIN

Minimum Acceptable Quality of Service Profile.

Change should be at carrier's request. Normally not required to be changed.

+CGQREQ

Set Quality of Service Profile.

Change should be at carrier's request. Normally not required to be changed.

+COPS=mode,[format][,oper]

Manually specify an operator. Refer also to ***NETOP**.

mode=0 : Automatic - any affiliated carrier [default].

mode=1 : Manual - use only the operator <oper> specified.

mode=4 : Manual/Automatic - if manual selection fails, goes to automatic mode.

format=0 : Alphanumeric ("name") (G3110 must use this format).

format=2 : Numeric

oper="name"

Windows Dial-up Networking (DUN)

Dial-up Networking (DUN) allows a computer or other device to use your Redwing to connect to the Internet or private network using PPP just like an analog modem using a standard phone line.

Microsoft Windows XP is used in the examples below. The modem driver installation and DUN setup and configuration is similar in Microsoft Windows 2000. Examples are not provided here for installing the driver or configuring DUN for any other operating system.



Caution: To install any driver on your computer, you may need to be logged in as Administrator or have Administrator privileges for your login.



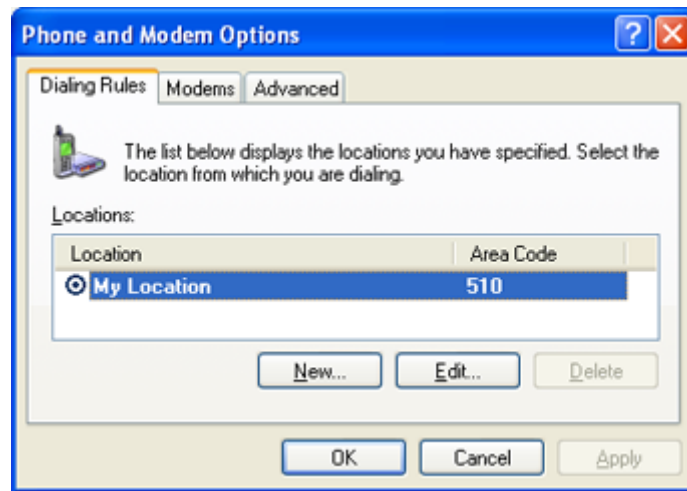
Installing the Modem Driver in Microsoft Windows

Standard installations of Microsoft Windows XP and 2000 include a generic modem driver which will work with your Redwing.

1. Connect the Redwing.
 - a. Connect the modem to the computer with the DB-9 cable.
 - b. Plug in the AC adapter, connect the antenna(s) and power on the modem.
2. Install the driver.
 - a. Select **Start > Control Panel > Phone and Modem Options** (in Classic View).



FIGURE 1. Phone and Modem Options



b. In the Phone And Modem Options dialog box, Select the **Modems** tab. Select **Add**.

FIGURE 2. Modems

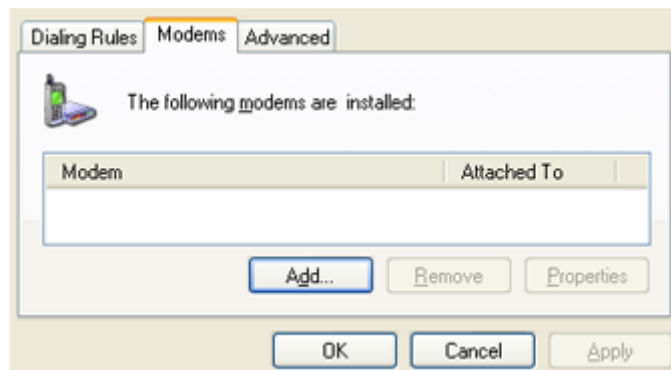
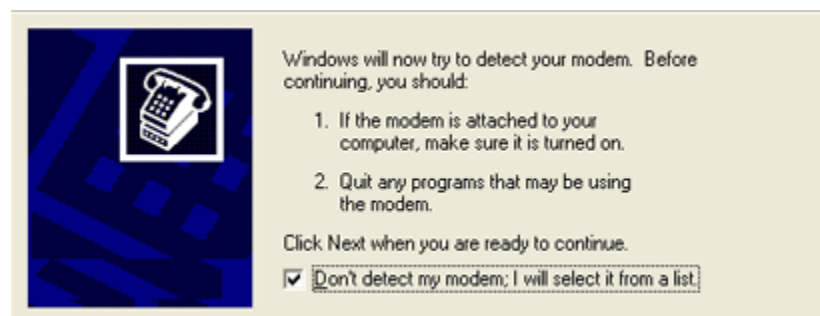


FIGURE 3. Install New Modem

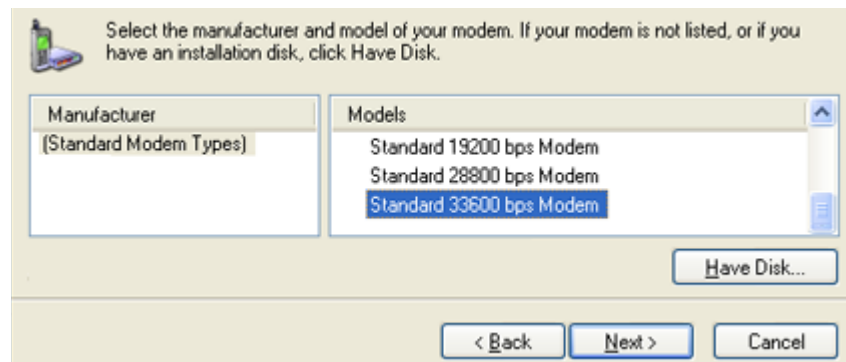


c. Check **Don't detect my modem; I will select it from a list** and select **Next**.

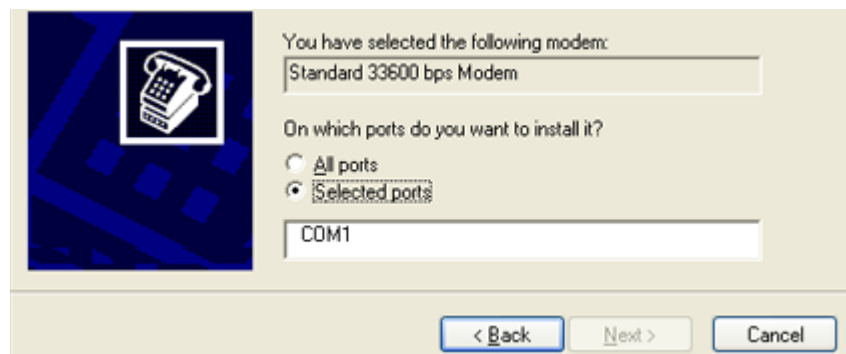
d. Select **(Standard Modem Types)** from the Manufacturers column, select **Standard 33600 bps Modem** from the Models column, and select **Next**.



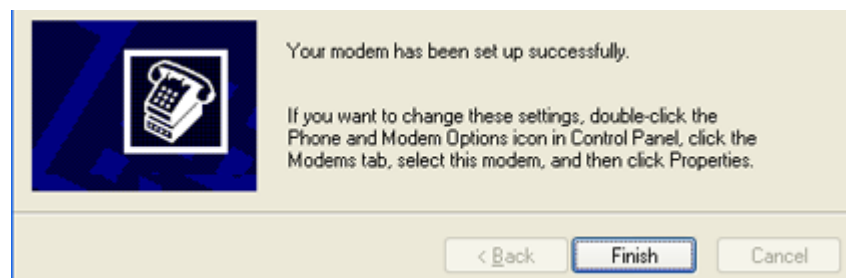
Note: If you have the speed for your modem configured as something other than the default, use the Standard Modem that matches the speed you configured.

**FIGURE 4. Modem Driver**

e. Check **Selected Ports**, select the COM port the modem is connected to (commonly COM1), and select **Next**.

FIGURE 5. Modem Port

f. Once the modem driver is installed, select **Finish**.

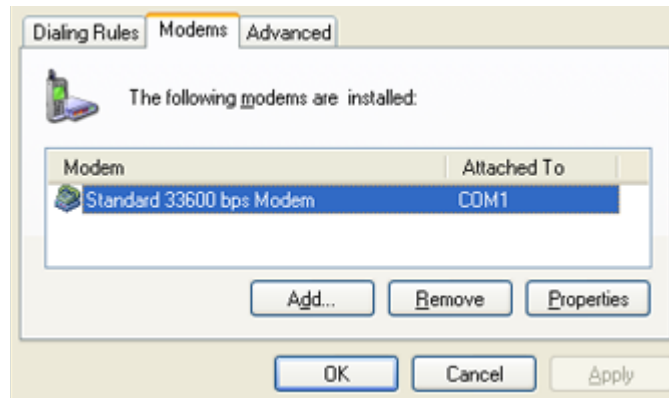
FIGURE 6. Finish

3. Configure the driver.

a. When you return to the Phone and Modem Options window, you should see the newly installed modem “attached to” the correct COMport. Highlight the modem and select **Properties**.

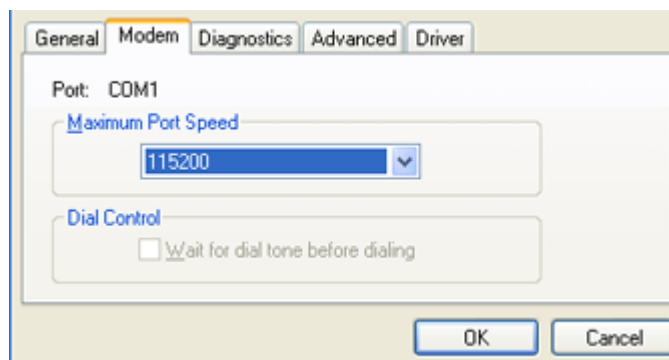


FIGURE 7. Modems



b. Select the **Modem** tab. **Maximum Port Speed** should be set to **115200** (default). Select **OK** to exit.

FIGURE 8. Setting Maximum Port Speed Maximum Port Speed



c. Select **OK** again to exit out of the Phone and Modem Options.

Dial-Up Networking (PPP) Configuration for Microsoft Windows

Once you have a driver for the modem installed on your computer, you can set up and configure Dial Up Networking (DUN) to use the modem as your connection to the Internet using PPP.

Before you start, you will need:

- Administrator privileges to the computer you are configuring or access granted by an administrator on the network to add/remove devices to your computer. (Not necessary on Windows 98/ME.)
- A wireless user account, password, and access number (obtained from Your Wireless Service Provider). *May not be required.*
- Windows COM Port and modem set up for a Standard 33600 Modem (see previous section).
- No other program running on your computer that is using the same COMport (serial port) configured for your modem.



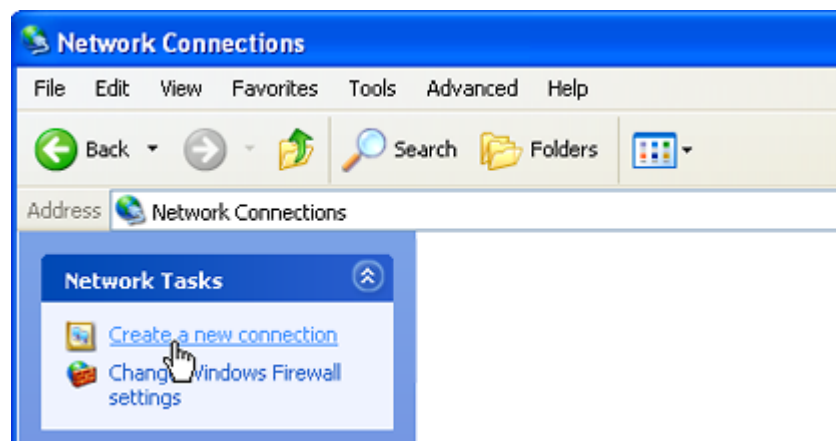
Caution: If you have an existing LAN connection, installing DUN for the modem may interfere with the LAN connection. [It's recommended to disconnect your LAN connection before using a PPP connection with your Redwing.](#)

Once the DUN connection is initiated, by default, it will take over as the “default route” for network communication and specifically for Internet access. If you want the two connections to co-exist, you will need to de-select “Use default gateway on remote network” (described later) and use the route command in Windows to setup routing through the modem properly. This guide does not provide information on the route command. You may need to consult with your network administrator to properly configure routing.

1. Create a new network connection.

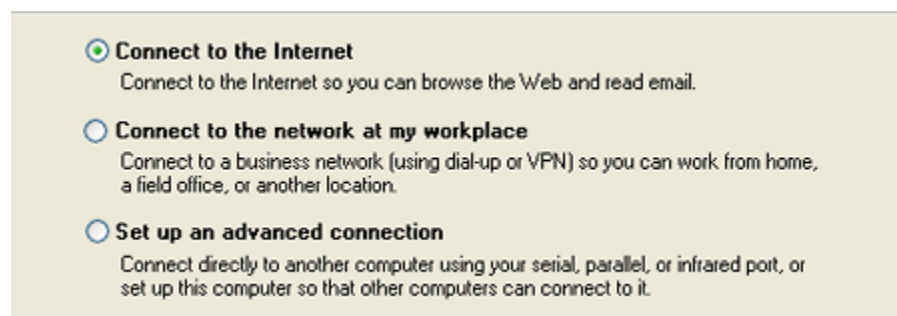
- a. Select **Start > Connect > To Show All Connections** to open the **Network Connections** window.

FIGURE 9. Network Connections



- b. Select **Create a New Connection** under *Network Tasks* in the menu area on the left. Select **Next** to start installing and configuring the DUN connection.
- c. Select **Connect to the Internet** and then select **Next**.

FIGURE 10. Connection Type



- d. Select **Set up my connection manually** and then select **Next**.



FIGURE 11. Preparing the Internet Connection

How do you want to connect to the Internet?

☐ Choose from a list of Internet service providers (ISPs)

☒ Set up my connection manually
For a dial-up connection, you will need your account name, password, and a phone number for your ISP. For a broadband account, you won't need a phone number.

☐ Use the CD I got from an ISP

e. Select **Connect using a dial-up modem** and select **Next**.

FIGURE 12. Internet Connection

☒ Connect using a dial-up modem
This type of connection uses a modem and a regular or ISDN phone line.

☐ Connect using a broadband connection that requires a user name and password
This is a high-speed connection using either a DSL or cable modem. Your ISP may refer to this type of connection as PPPoE.

☐ Connect using a broadband connection that is always on
This is a high-speed connection using either a cable modem, DSL or LAN connection. It is always active, and doesn't require you to sign in.

f. Type in a name for the connection, such as **AirLink 3G Connection**. Select **Next**.



The name provided here will not effect the connection in any way. It is only a label for the icon. It can be the name of your wireless service provider (Your Wireless Service Provider), your modem (Redwing), or any other designation for the connection.

FIGURE 13. Connection Name

Type the name of your ISP in the following box.

ISP Name

AirLink 3G Connection

The name you type here will be the name of the connection you are creating.

Optional: If you have multiple modems installed on your computer, you may be prompted to select the modem to be used. Check **Standard 33600 bps Modem** and select **Next**. *If you only have one modem installed, this option will be omitted.*

g. Type in **10001** as the phone number for the modem to dial and select **Next**.



FIGURE 14. Phone Number

Optional: If you have multiple users configured for your computer, you may be prompted for *Connection Availability*. If you select **My use only**, the account currently logged on will be the only one able to use this DUN connection.

h. You will need to enter the Account Information (User name and Password) for the connection. If you want to allow others to use the same login for the modem, select **Use this account name and password...** Select **Next** to continue.



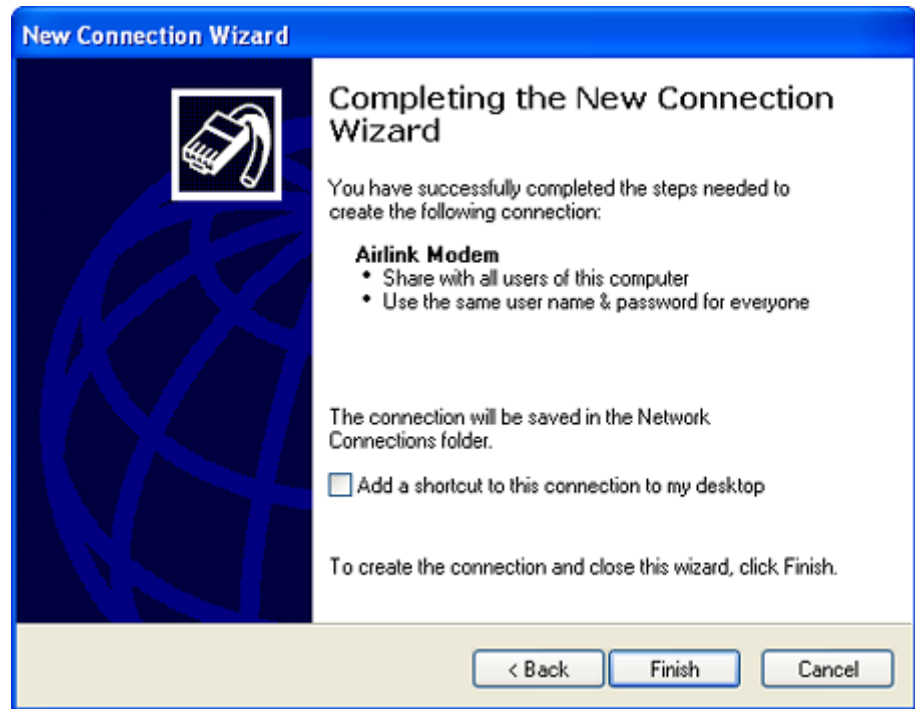
Caution: If you have a LAN connection to the Internet and select **Make this the default Internet Connection for the DUN configuration**, you will not be able to use the LAN to connect to the Internet and may also affect the network connection on your computer to the rest of the LAN. Select this option **ONLY** if the Redwing will be your sole network connection.

FIGURE 15. Account Information

i. If you want to add a shortcut for this DUN connection to your desktop, check **Add a shortcut...** Select **Finish** to exit the *Network Connection Wizard*.



FIGURE 16. Finish



2. Configure the connection.

After you complete the New Connection Wizard, there are a few more things you will want to configure in the connection.

- a. When the **Connect** window opens, select **Properties**.

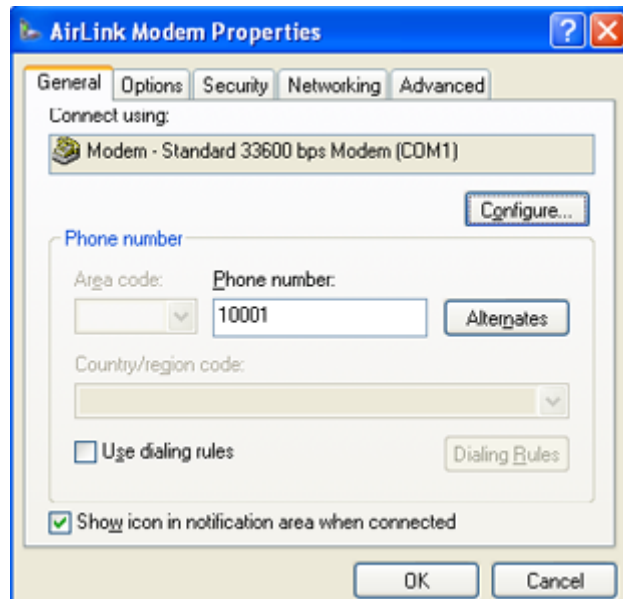
FIGURE 17. Connect



- b. Uncheck **Use dialing rules**. Select **Configure**, below the **Connect using** line.

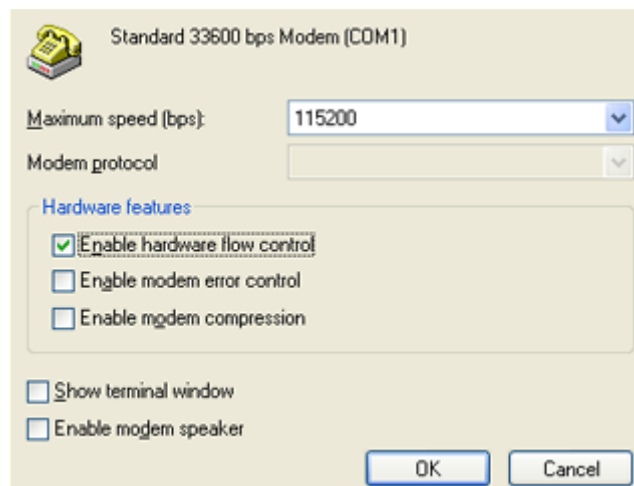


FIGURE 18. Modem Properties



c. Select **115200** as the *Maximum speed*. Check **Enable hardware flow control**. Do not check any other option. Select **OK**.

FIGURE 19. Modem Configuration



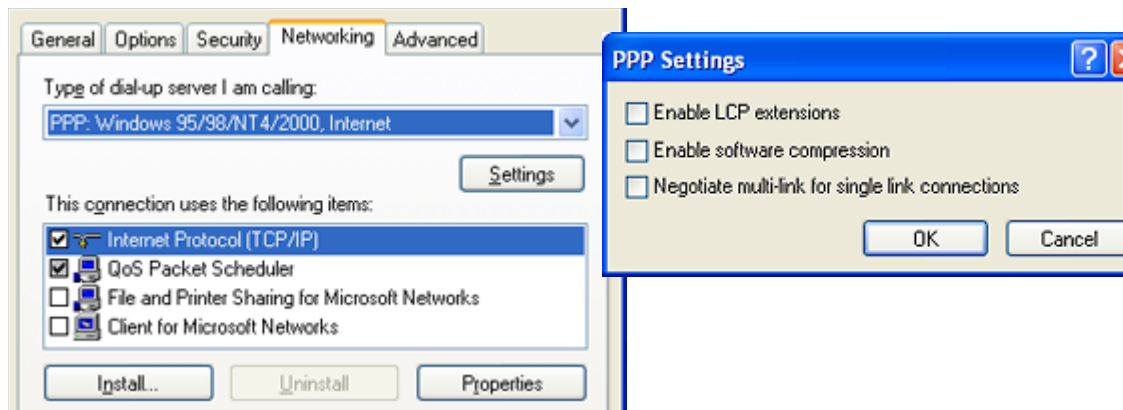
Optional: You may want to check the **Options** tab and change the settings for applications you might be using. The default options are generally applicable for most uses.

d. Unless specifically directed to do so by Support or your network administrator, you do not need to make any changes to the options on the **Security** tab.

e. Select **Network**. Select **Settings**. Remove the checks from all three PPP settings. Select **OK**.

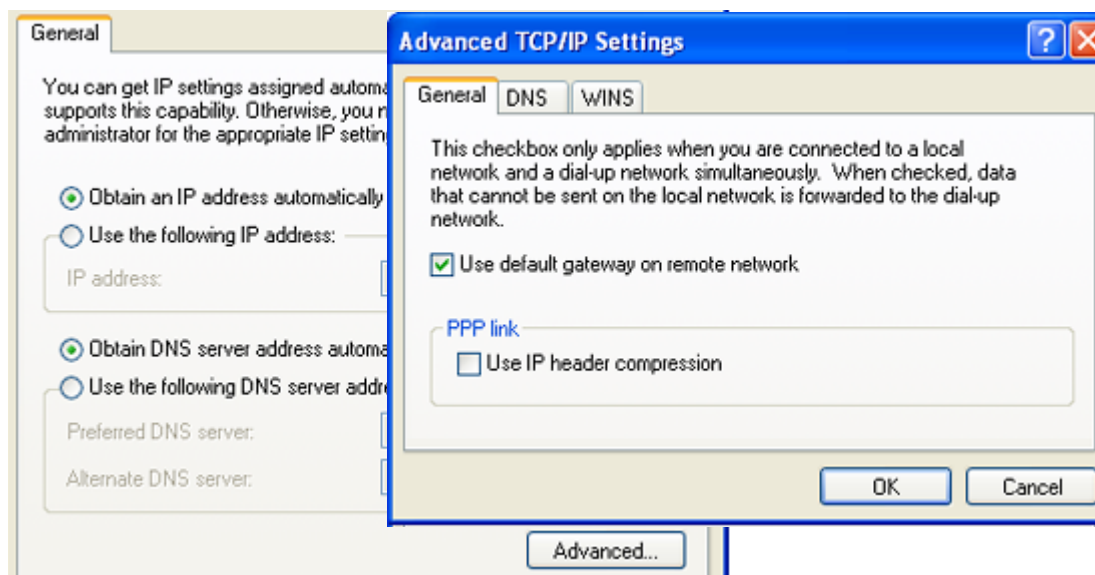


FIGURE 20. Connection Properties - PPP Settings



f. Select (highlight) **Internet Protocol (TCP/IP)** and then select **Properties**. For most configurations, you will be obtaining the IP address and the DNS server address automatically. Select **Advanced**. Uncheck **Use IP header compression**. Check **Use default gateway...** Select **OK**.

FIGURE 21. Internet Protocol



g. Select **OK** and **OK** again to return to the *Connect* window.

Making a DUN Connection

1. Start the DUN session.
Start > Connect To > AirLink 3G Connection (or whatever you named the connection).



FIGURE 22. MS Windows XP: Connect

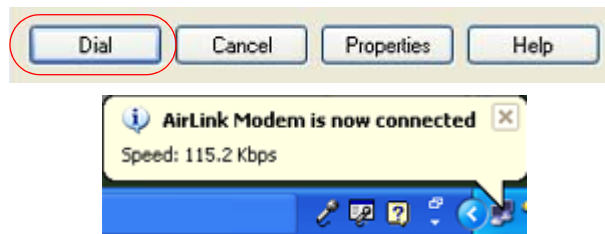


For some accounts, you need to enter the **User name** and **Password** provided by Your Wireless Service Provider for the cellular account.

2. Connect to the network.

Select **Dial** to connect to the modem and the cellular network. When you're connected, an icon should appear in the system tray showing the connection status.

FIGURE 23. MS Windows XP: Connect



Warranty Terms and Conditions

The following terms and conditions ("Warranty Terms") govern the warranty services offered to you ("Customer") by AIRLINK COMMUNICATIONS, INC. ("AirLink"), located at 3159 Corporate Place, Hayward, CA 94545, in connection with the sale and licensing of AirLink software and hardware.

Warranty Terms

Standard Software Warranty

AirLink warrants that the AirLink software ("Software") licensed hereunder will perform in substantial conformance to the applicable AirLink software specifications during the warranty period. The warranty period is ninety (90) days from the date of delivery of the Software to Customer. AirLink's sole obligation with respect to this express warranty shall be, at AirLink's option, to refund the license fee paid by Customer for any defective Software or to replace the Software with Software that substantially conforms to AirLink's applicable software specifications.

One Year Standard Equipment Warranty

For a period of one year from delivery, AirLink warrants that the hardware products ("Hardware") will meet AirLink's standard specifications and will be free from defects in materials and workmanship.

Optional Two Year Extended Equipment Warranty

If Customer has purchased this two-year extended warranty option, for a period of three years from delivery, AirLink warrants that the Hardware will meet AirLink's standard specifications and will be free from defects in materials and workmanship.

Optional Four Year Extended Equipment Warranty

If Customer has purchased this four-year extended warranty option, for a period of five years from delivery, AirLink warrants that the Hardware will meet AirLink's standard specifications and will be free from defects in materials and workmanship.



Warranty Conditions

Remedy

If under normal use the Software and/or Hardware (collectively, the "Products") prove to have any such defect and the Customer notifies AirLink of such defect within the warranty period, AirLink, at its option, will either repair or replace the same without charge. The warranty does not apply if the serial number label or any warranty voiding label has been removed or if the Product has been subjected to physical abuse, improper installation, or modification not authorized by AirLink, or if the Product was used in a manner for which it was not intended. Products will be accepted for repair or replacement upon written authorization and in accordance with instructions of AirLink. Customer will obtain a Return Material Authorization ("RMA") number from AirLink's Customer Support, fill out an RMA submission form, and enclose it with the product. Transportation expenses associated with returning such Products to AirLink will be borne by Customer. AirLink will pay the costs of return transportation of the repaired or replaced Products. Please contact AirLink's support group via email at support@airlink.com or telephone at 510-781-9760 to obtain an RMA number. Products deemed by AirLink to be DOA (dead on arrival) may be returned to AirLink for repair, at AirLink's expense, using the standard RMA procedures.

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Frequently Asked Questions and Technical Support

Many of these questions and solutions in the following sections come from AirLink Support.



Caution: Solutions should only be performed if you are experiencing the specific problem indicated and have the specific modem model number indicated. Some solutions are very specific to model numbers due to differing internal hardware.

FAQ Topics

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What is the Proper RF Coverage for my Redwing?	
What Type of Antenna is Best for my Redwing?	
What do I need to power my Redwing ?	
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Power, Antennas, and Signal Strength



What is RSSI? Why is the RSSI for my Redwing negative?

RSSI (Received Signal Strength Indication) is a measurement of the strength or intensity, not necessarily the quality, of the received signal.

The RSSI is measured in dBm which is the power ratio in decibel (dB) of the measured power referenced to one milliwatt (mW). One milliwatt is zero, therefore less than a milliwatt, common and ideal for cellular communication, is expressed as a negative integer.



What is the Proper RF Coverage for my Redwing?



The optimal range for AirLink modems is an RF Coverage (RSSI value) of -60 to -95. RF coverage between -95 to -105 DBm will often still register, however functionality at this range can be greatly reduced and registration can become difficult. Any devices with an RSSI below -105 DBm will likely fail to register on a regular basis.

When addressing RF coverage ensure the antenna choice is appropriate for the device and frequencies required.



What Type of Antenna is Best for my Redwing?

Antennas for cellular communication are commonly omni-directional and either dual-band or multi-band. They come in a variety of shapes and mounting configurations to suit several different types of needs.

While AirLink does sell a limited selection of antennas and antenna accessories, these are by no means all that are available or usable with your Redwing. There are several suppliers of cellular accessories with a much wider selection of antennas designed to cater to a broader variety of situations.

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 FFC's, Industry Canada's, or your country's radio communications regulatory body's regulations.

Dual-band

For cellular communication, the Redwing requires a dual band antenna supporting both 800 MHz and 1900 MHz (1.9 Ghz) bands.



Caution: Single band antennas, such as those formerly used with a CDPD device, generally only support 800 MHz. Using a single band antenna can greatly reduce your ability to activate or use your Redwing with Your Wireless Service Provider.

Dipole

Dipole is a common antenna type connecting directly to the Redwing and extending out in a single straight wire.

The short dipole antenna (also known as a "rubber duck") is a good desktop, portable antenna for use in areas with good signal strength and low electrical interference.

Mounts

Antennas can be mounted in a variety of ways (magnet, permanent, suction to a window, sticky tape, etc) which can allow you to move the antenna away from the Redwing with a coax cable between the modem and the antenna allowing the antenna to be placed in a more suitable location for proper cellular reception: outside of a metal cabinet, the trunk lid of a car, a window, etc. A mounted antenna can be placed in locations where the simple, short dipole antenna connected directly to the Redwing may not perform at all.



What do I need to power my Redwing ?

Your Redwing is designed to work either with DC (commonly used in vehicles) or with an AC adapter (standard wall outlet in the US, Canada, and most other countries). The input voltage is 9VDC to 28VDC with an input current from 90mA to 350 mA.

If the modem is provided an inadequate power supply the following symptoms might be experienced:

- Modem will constantly power cycle while attempting to register
- Modem will register but will power cycle when data is transmitted/received
- Modem won't power on at all.

If these symptoms occur, verify the power supply meets the above mentioned criteria. If an AC adapter is being used; verify it is intended for the AirLink product in question.



Caution: If you previously used AirLink CPDP modems, you may have older power supplies that provide inadequate power and will cause the above mentioned symptoms.



Can I use a portable battery to power my Redwing ?

It is possible to use a portable battery for your AirLink modem, however, you most likely need to make the connector from the battery to the modem yourself. The battery also needs to have enough power to be able to handle the power consumption of the modem.

You can contact AirLink Support for a guide on how to use your AirLink modem with a portable battery.

The Redwing's IP Addresses and Local Networking



Why Can't I reach my Redwing from the Internet? What is a Restricted or Private IP?

On Your Wireless Service Provider's network, for security reasons, some accounts set up to be restricted to communication only from other devices on their network, called a Restricted IP or a Private IP. If you had two modems on Your Wireless Service Provider's network, they could communicate, but your computer, not using Your Wireless Service Provider as an ISP can't. You could normally still access the Internet using your Redwing's restricted or private IP because the modem would use a proxy or gateway on Your Wireless Service Provider's network.



However, if you need to be able to contact your Redwing (or the devices behind it) directly, instead of a **Restricted IP** (also called **Private IP**, **Non-Routable IP**, or **Proxy APN**), you will need to contact Your Wireless Service Provider your cellular provider to get your account changed to an **Unrestricted IP** (also called **Public IP** or **Internet APN**).



Note: Customized APNs are generally private and non-routable.

Security for the Redwing



Does GPRS provide any security?

While the structure of the GPRS network provides data security, it is still recommended you use a VPN for additional data communication security.

For specific information about the security of Your Wireless Service Provider's network, contact your cellular dealer directly.



AirLink Technical Support

If you encounter problems with operation of your Redwing, AirLink's support staff can help.

AirLink Support Web Site

The AirLink web site is updated frequently with Setup Wizards, Utilities, How-To Guides, and other documentation: <http://www.airlink.com/support>.

AirLink Documentation and Guides

- **Modem User Guides** - These guides are specific to your modem type, cellular provider, and cellular technology and contain comprehensive information about the operation of the modem and its features.
- **Modem Quick Start guides** - These guides are also specific to the modem type, cellular provider, and cellular technology and are a step by step guide to activating the modem using the Setup Wizard or other steps as applicable.
- **Utility Guides** - These guides focus on the features of one of the AirLink modem utilities: Wireless Ace, AceView, AceNet, Modem Doctor, etc.
- **Application Notes and How-To Guides** - These guides detail configuring the modem to work with a specific feature set or how the modem can be set up to work with a specific 3rd party (non-AirLink) device.
- **Data Sheets and White Papers** - These are technology based information documents.

Contacting Technical Support

For support assistance please email support@airlink.com or call **510-781-9760** Monday through Friday 5 AM to 5 PM Pacific Time (8 AM to 8 PM Eastern Time). Support is not available weekends or holidays.

**Power, Antennas, and Signal Strength 38**

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