

INSTRUCTION MANUAL



Redwing 100 and Redwing 105 Airlink CDMA Modems

7/04

Warranty and Assistance

The **REDWING 100 AND REDWING 105 AIRLINK CDMA MODEMS** is warranted by CAMPBELL SCIENTIFIC, INC. to be free from defects in materials and workmanship under normal use and service for twelve (12) months from date of shipment unless specified otherwise. Batteries have no warranty. CAMPBELL SCIENTIFIC, INC.'s obligation under this warranty is limited to repairing or replacing (at CAMPBELL SCIENTIFIC, INC.'s option) defective products. The customer shall assume all costs of removing, reinstalling, and shipping defective products to CAMPBELL SCIENTIFIC, INC. CAMPBELL SCIENTIFIC, INC. will return such products by surface carrier prepaid. This warranty shall not apply to any CAMPBELL SCIENTIFIC, INC. products which have been subjected to modification, misuse, neglect, accidents of nature, or shipping damage. This warranty is in lieu of all other warranties, expressed or implied, including warranties of merchantability or fitness for a particular purpose. CAMPBELL SCIENTIFIC, INC. is not liable for special, indirect, incidental, or consequential damages.

Products may not be returned without prior authorization. The following contact information is for US and International customers residing in countries served by Campbell Scientific, Inc. directly. Affiliate companies handle repairs for customers within their territories. Please visit www.campbellsci.com to determine which Campbell Scientific company serves your country. To obtain a Returned Materials Authorization (RMA), contact CAMPBELL SCIENTIFIC, INC., phone (435) 753-2342. After an applications engineer determines the nature of the problem, an RMA number will be issued. Please write this number clearly on the outside of the shipping container. CAMPBELL SCIENTIFIC's shipping address is:

CAMPBELL SCIENTIFIC, INC.

RMA# _____
815 West 1800 North
Logan, Utah 84321-1784

CAMPBELL SCIENTIFIC, INC. does not accept collect calls.

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Redwing100 and Redwing105 AirLink CDMA Modems

1. Introduction

Redwing modems are full-duplex, digital cellular modems that communicate with a base station PC via Code Division Multiple Access (CDMA) network and Public Switched Telephone Network (PSTN). Redwing100 modems are for use on the Verizon network only. Redwing105 modems are for use on the Alltel network.

2. Specifications

2.1 Base Station Requirements

- PC with Hayes-compatible modem, running Campbell Scientific's LoggerNet or PC400 software.
- Subscription to the Verizon CDMA network with coverage at the datalogger site.

2.2 Datalogger Site Equipment

- Redwing modem—includes power cable; the modem is configured using the CellSet.exe program
- Datalogger—CR510, CR10(X), CR23X, CR7, CR5000, or CR2XX
- SC105 or SC932A Interface—connects the modem to the CR510, CR10(X), or CR7 dataloggers' CS I/O port
- 14392 Null Modem Cable—connects the modem to the CR23X, CR2XX, or CR5000 RS-232 port
- 14394 Redwing Mounting Kit—includes mounting hardware for securing the modem to below referenced environmental enclosure and a 9-pin male to 9-pin female cable.
- Antenna—the following antennas are available from Campbell Scientific; sites near the edge of the CDMA coverage may require the Yagi antenna. Contact a CSI applications engineer for help in determining the best antenna for your application.
 - 14453 0 dBd ½ Wave Dipole Whip Cellular Antenna
 - 14454 8 dBd Yagi Cellular Antenna with 10' Cable
- Power Supply (see power considerations)
- Environmental Enclosure— ENC 10/12, ENC 12/14, or ENC 16/18

2.3 Power Considerations

- A power cable included with the modem connects to the datalogger's 12 V or switched 12 V terminal. Connection to the switched 12 V terminal allows the datalogger to switch power to the modem during scheduled transmission intervals if desired.
- When using the switched 12 V terminal, the modem can be powered with a BP12 battery, CH100 charger/regulator, and MSX10 solar panel.

3. Configuration

3.1 Establish Cellular Service

Prior to contacting Verizon (Redwing100) or Alltel (Redwing105), have the following information on hand:

1. Electronic Serial Number (ESN). The ESN is found on the unit label.
2. Desired area code and local prefix. Normally, choose the same area code and prefix as the calling PC. These will ensure that calls are billed at local rates, even if the phone is used outside the local calling area.

Contact the provider, tell the account representative that you would like to open an account for a new voice phone. Request a voice plan similar to Verizon's America's Choice 400 Plan. Ask that voice mail NOT be activated.

The provider will provide you with the following:

1. A 10-digit phone number.
2. System ID (SID). You may need to ask for this.

3.2 Program the Modem

Program the modem with CELLSET.EXE, available from Campbell Scientific, Inc. The appendix describes how to program the modem via a terminal emulator; however, programming via a terminal emulator is NOT recommended.

1. Connect the phone to your computer COM port.
2. Apply 12 volts to the phone. Red lead to +, black lead to -.
3. Start CELLSET.EXE and enter the 10-digit phone number to be programmed into the phone.
4. Enter the SID. If you do not have the SID, try entering zero.
5. For CR10(X), CR510, CR7, 21X, or CR200 dataloggers, set the baud rate to 9600. For CR23X or CR5000 dataloggers, set the baud rate to 38400.
6. Press "Set Settings" button to program the phone.

3.3 Setup LoggerNet

1. Select Add Root | TapiPort.
2. Add a TapiRemote to the TapiPort.
3. Add a datalogger to the TapiRemote.



4. On the TapiPort page, select your installed modem on the Tapi Line.
5. On the TapiRemote un-check “Use Tapi Dialing Properties.”
6. Enter the phone number of the CDMA phone.
7. Apply the changes and test.

NOTE

If you have a black SC12 cable, that is not Rev 1 or newer, it is a CS I/O cable only and will not work for RS-232. Connect the black SC12 cable between the datalogger and the SC932A. Use a 9-pin serial cable or a blue ribbon cable between the phone and the SC932A.

Appendix A. Configuring Modem with a Terminal Emulator

NOTE Programming the modem with a terminal emulator is not recommended. Please first attempt programming with the CELLSET.EXT program available from Campbell Scientific, Inc.

Items needed:

- Computer with a COM port.
- 9-pin cable to connect between the computer and the Redwing.
- A terminal program on the computer “HyperTerminal”.
- 12 volt DC applied to the Redwing.
- CDMA account

A.1 HyperTerminal Setup

Under “Connect using”, select the COM port you will be using.

Set COM Properties to:

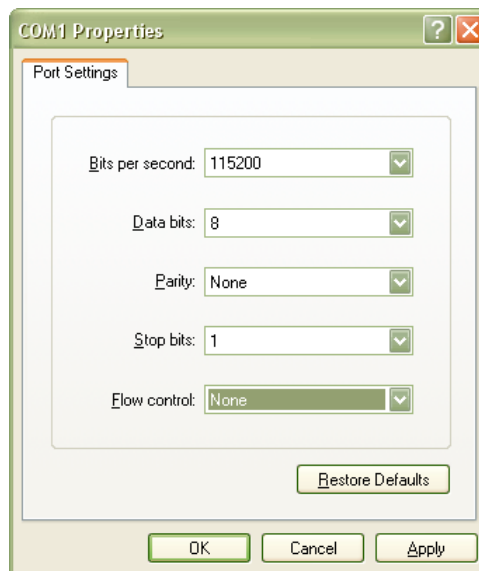
Bits per second (baud) = 115200

Data bits = 8

Parity = None

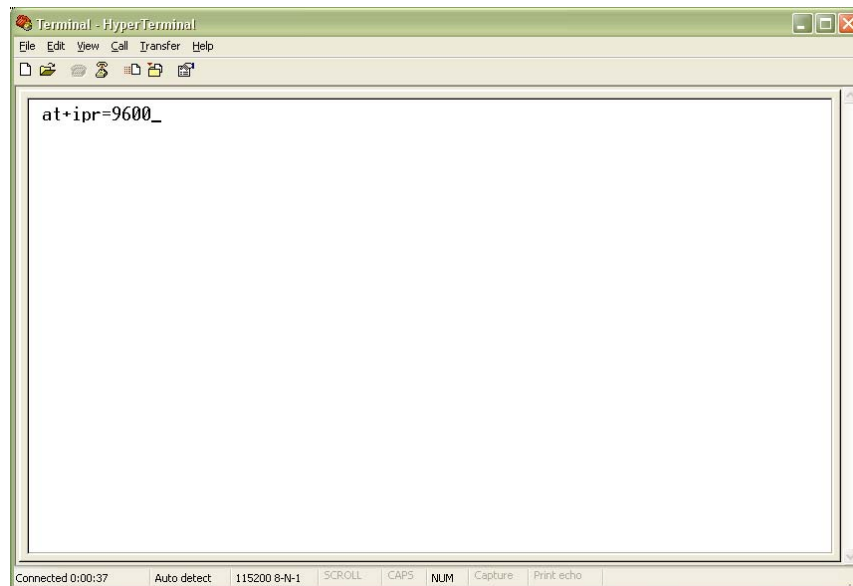
Stop bits = 1

Flow control = None



Apply power to the modem and connect it to the computer via the 9-pin serial cable.

Enter the following AT command: `at+ipr=9600` and then press Enter.



This has now changed the baud rate from 115200 to 9600. You need to change the baud rate in HyperTerminal to 9600 now. At the top of the HyperTerminal window select **Call | Disconnect**. Select **File | Properties | Configure**. Change the baud rate to 9600. Select OK. Select **Call | Call**.

A.2 Programming the Redwing's Phone Number

Your provider should give you a Phone number and a System Identification (SID) number to program into the Redwing.

Do the following substituting the phone number and SID with yours:

(Example Phone number - 4355551212, SID - 134)

- Type **AT~NAMLCK=000000** then press Enter.
- Type **AT~NAMVAL=0,4355551212,134,65535** then press Enter.

NOTE

There are no O's in the above strings, they are Zero's.

Remove the power from the Redwing and power it up again.

You can type **AT~NAMVAL?0** to make sure your phone was programmed correctly.

A.3 Programming the Redwing for Use with a Datalogger

The Redwing needs a few settings changed in it to power-up ready to work with the datalogger.

Enter the following:

- Type `AT+ATINIT=&C1&D0S0=1$QCVAD=4%+IFC=0^0,C,%,^` then press Enter.
- Type `AT+ATINITSTATE=1` then press Enter.

NOTE

In the above strings, all “0” = zero.

Remove the power from the modem and power it up again. It should be ready to use. Test the communications before deploying the modem.

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