

INSTRUCTION MANUAL



Redwing 100
AirLink CDMA Modem C3111

Revision: 10/05

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CAMPBELL SCIENTIFIC, INC.

RMA#_____

815 West 1800 North

Logan, Utah 84321-1784

CAMPBELL SCIENTIFIC, INC. does not accept collect calls.

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Redwing 100 AirLink CDMA Modem

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.

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 CellWizard.exe
- 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, CR1000, 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
 - 18285 1 dBd Omnidirectional Antenna with 10' Cable
 - 14454 9 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, 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 450 Plan. Ask that voice mail NOT be activated. The Redwing may show up on Verizon's network as a MultiTech device; this is okay.

The provider will provide you with the following:

1. MDN (Mobile Directory Number). This is the number you dial.
2. MIN (Mobile Identification Number). This number identifies the Redwing on the cellular network. This may be the same number as the MDN.

3.2 Program the Modem

Program the modem with CellWizard.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 the preferred method.

1. Connect the phone to your computer COM port.
2. Apply 12 volts to the phone. Red lead to +, black lead to -.
3. Start CellWizard.exe and select the COM port you will be using to program the Redwing.
4. Select desired datalogger baud rate. For the CR1000 or CR5000 dataloggers, set the baud rate to 115200. For the CR10(X), CR510, CR7, 21X, or CR200 dataloggers, set the baud rate to 9600. For the CR23X datalogger, set the baud rate to 38400.

5. Enter the MDN.
6. Enter the MIN.
7. Press the “Start” 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 CellWizard.exe program available from Campbell Scientific, Inc.

Items needed:

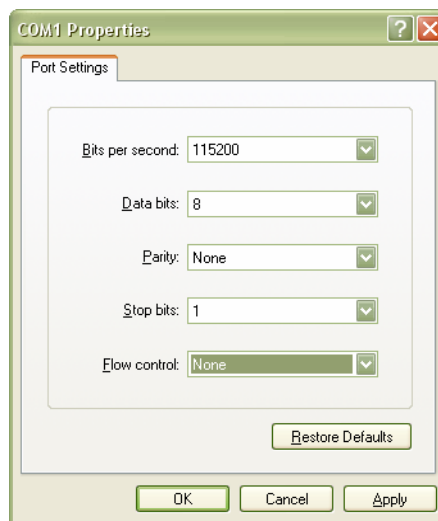
- Computer with a COM port.
- 9-pin cable to connect between the computer and the Redwing.
- A terminal program on the computer “HyperTerminal”.
- 12 volt DC applied to the Redwing.
- Antenna on the Redwing (for over-the-air updates).
- CDMA account.

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.

A.2 Programming the Redwing's Phone Number

Your provider should give you two numbers to program into the Redwing, the MDN (Mobile Directory Number) and MIN (Mobile Identification Number).

Perform the following steps substituting the MDN and MIN with yours.

AT Commands to be typed are in **bold**. Follow each AT command string by pressing the Enter key and verify the response.

Step	AT Commands	Response	Description
1	AT+WSPC=1,000000	OK	Unlocks the module for service provisioning AT commands.
2	AT+WMDN=[MDN] Example: AT+WMDN=4352551212	OK	Enter the MDN here. The MDN is the number used to dial this device.
3	AT+WIMI=31000[MIN] Example: AT+WIMI=310004352551234	OK	Enter the MIN here. The 31000 must precede the MIN. The MIN is the number used to identify this device on the cellular provider's network. This number may be the same as the MDN.
4	AT+WCMT=1	OK	Commits the changes done during the service programming session.
		+WIND:8	Commission of these changes will force a software reset of the module.
5	AT+CDV*22890	+WORG:*22890 +WCNT:3 +WOT1:"Programming in progress" +WOTS:"SPL unlocked" +WOTP:"PRL Download OK" +WOTM:"MDM Download OK" +WOTC:"Commit Successful" +WOT2:"Programming Successful!"	Initiates over-the-air update. You must have cellular coverage with good signal strength for this to be successful.

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

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.

Step	AT Commands	Response	Description	
6	ATS0=1+CICB=0	OK	Sets auto answer in data mode.	
7	AT+IFC=0,0	OK	Disables local flow control.	
8	AT+IPR=[baud rate]; &W Example: AT+IPR=9600; &W	OK	Sets the Redwings RS232 baud rate and saves settings. Use the following to determine baud rate:	
			CR1000 CR5000	115200
			CR23X	38400
			CR10(X) CR510 CR200 CR7	9600

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 at the baud rate set in Step 8. Test the communications before deploying the modem.

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