

INSTRUCTION MANUAL



Redwing CDMA1X (C3111) Airlink Cellular Modem

Instruction Manual for use in
IS-95B Circuit Switched/Voice Mode

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Redwing CDMA1X AirLink Cellular Modem

1. Introduction

The Redwing CDMA1X modem is a full-duplex, digital cellular modem that communicates with a base station PC via Code Division Multiple Access (CDMA) network and Public Switched Telephone Network (PSTN). The Redwing CDMA1X modem is for use on Bell, Aliant, ManitobaTel, and SaskTel networks only.

2. Specifications

2.1 Base Station Requirements

- PC with Hayes-compatible modem, running Campbell Scientific's LoggerNet or PC400 software.
- Subscription to Bell, Aliant, ManitobaTel, or SaskTel CDMA networks with coverage at the datalogger site.

2.2 Datalogger Site Equipment

- Redwing CDMA1X modem—includes power cable; the modem is configured using the Hyperterminal program prior to installation
- Datalogger—CR510, CR10(X), CR23X, CR7, CR800, CR1000, CR5000, or CR2XX
- SC105 or SC932A Interface—connects the modem to the CR510, CR10(X), or CR7 dataloggers' CS I/O port
- L14392 Null Modem Cable—connects the modem to the CR23X, CR800, CR1000, CR2XX, or CR5000 RS-232 port
- L14394 Redwing Mounting Kit—includes mounting hardware for securing the modem to below referenced environmental enclosure.
- Antenna—the following antennas are available from Campbell Scientific; sites near the edge of the CDMA coverage may require the Yagi antenna. Contact a CSC Applications Technician for help in determining the best antenna for your application.
 - L14453 Omni 0 dBd ½ Wave Dipole Whip Cellular Antenna
 - L14454 Yagi 8 dBd 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 typically be powered with a BP12 battery, CH100 charger/regulator, and MSX10 solar panel.

3. Configuration

3.1 Establish Cellular Service

Prior to contacting the cellular service provider*, 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. Choose the same area code and prefix as the calling PC to ensure that calls are billed at local rates, even if the phone is used outside the local calling area.

*For modem activation, further information, and assistance in selecting the most suitable cellular plan, please call 1-866-928-4465 or email info@thinktel.ca

NOTE: Indicate to the account representative that you would like to open a new account using your modem in IS-95B circuit switched/voice mode. The service provider does not need the Redwing modem to activate the account.
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3.2 Program the Modem

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.

3.3 Hyperterminal Setup

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

Set COM Properties to:

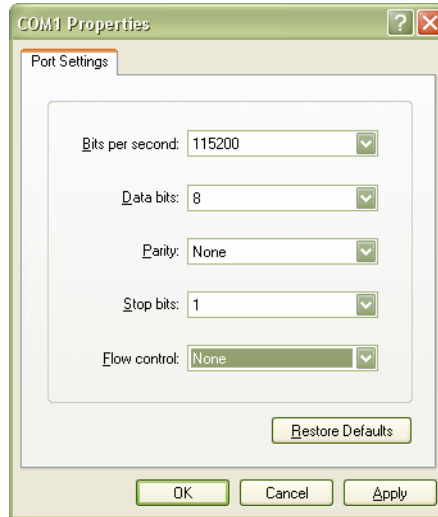
Bits per second (baud) = 115200

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.

3.4 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). In most cases these numbers are the same.

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,xxxxxx (where xxxxxx represents the lock code of your modem. Example AT+WSPC=1,123456)	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!" *results may vary*	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.

3.5 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:	
			CR800 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.

3.6 Setup LoggerNet (Option A)

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



4. On the TapiPort page:
 - a. Select Communications Enabled.
 - b. If you are using the Call-back feature of the datalogger on any of your stations, select Call-Back Enabled.
 - c. Select your installed modem on the Tapi Line.
 - d. Extra Response Time can remain as 0 seconds.
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.

3.7 Setup LoggerNet (Option B)

2. Select Add Root | ComPort.
3. Add a PhoneBase to the ComPort.
4. Add a PhoneRemote to the Phone Base.
5. Add a datalogger to the Phone Remote.



6. On the ComPort page:
 - a. Select Communications Enabled.
 - b. If you are using the Call-back feature of the datalogger on any of your stations, select Call-Back Enabled.
 - c. Select the ComPort that is connected to your modem from the drop-down menu.
 - d. Extra Response Time can remain as 0 seconds.
7. On the PhoneBase page:
 - a. Select Communications Enabled.
 - b. Select the modem that you are using from the Modem Type list.
 - c. 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 (when using the RS232 port).
 - d. Extra Response Time can remain at 0 seconds.
8. On the PhoneRemote page:
 - a. Select Communications Enabled.
 - b. The Delay can remain at 0 milliseconds.
 - c. Enter the Phone Number.
9. 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.
