Application Note

for connecting the

AirLink Raven CDPD Modem

to Ethernet Devices using the

IP 5200 from DCB

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1. Overview

This document describes how to connect the AirLink Raven CDPD Modem to the IP5200 Async-Router from Data Communications for Business (DCB). Information on the IP5200 and DCB is available at www.dcbnet.com. Additional information about AirLink Communications products is available at www.AirLink.com

2. Internet (TCP/IP) Connection via CDPD

Normally, remote access to an IP 5200 is done via Dialup Telephone Line. When using CDPD, remote access to is done via a TCP/IP connection to the CDPD Network (ie: Internet) and the use of a CDPD Modem connected to a DCBNet IP5200 Single-Port Async-Router.

On the HOST side, access to the CDPD Network could be made using any of the following means:
1. Using a Frame Relay connection into the CDPD Network
2. Using the public Internet
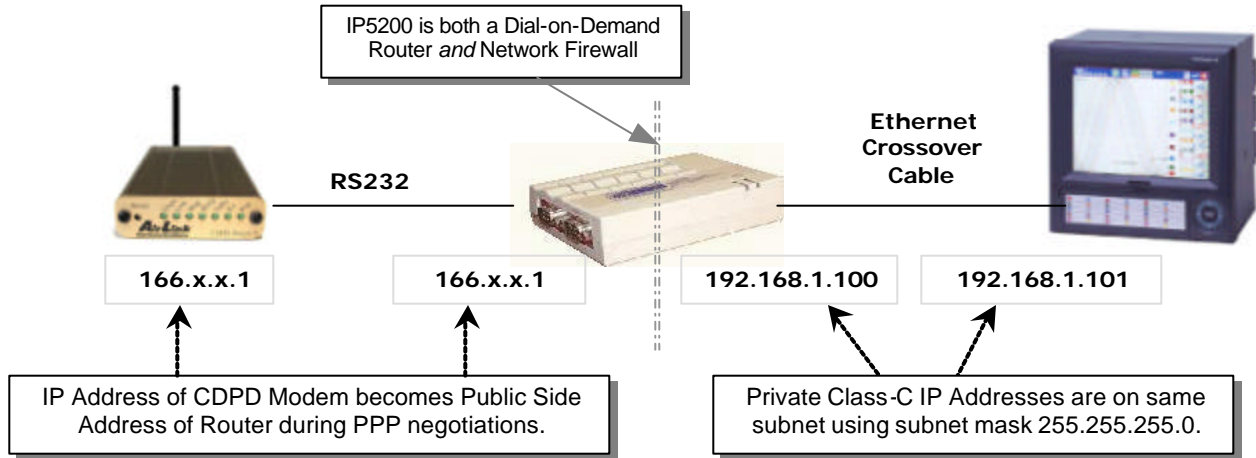3. Using another CDPD Modem connected to the Host System
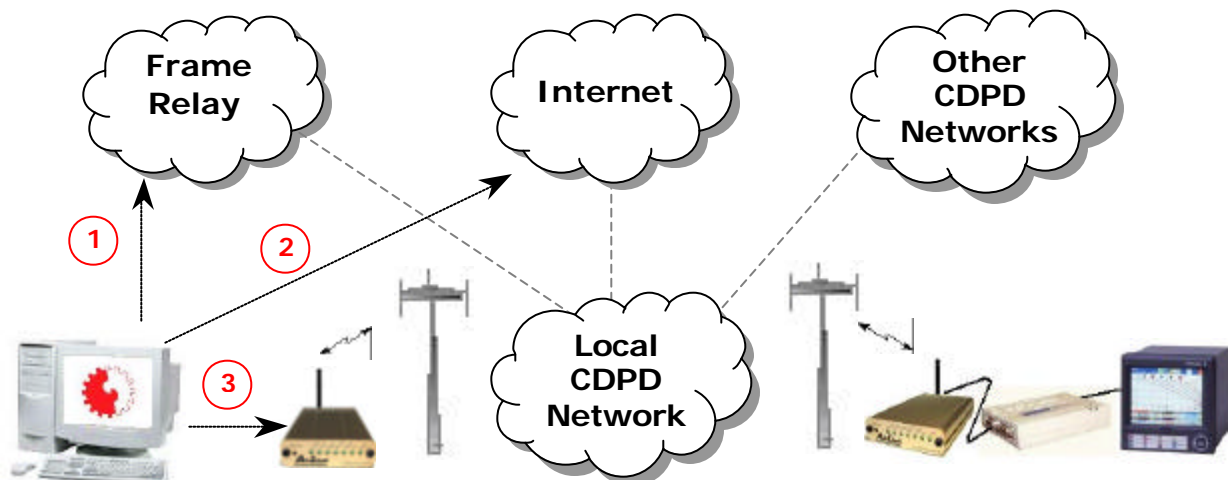
3. Ethernet Device & IP5200 Cabling & Installation

Setting up the Ethernet device (PC, RTU, PLC, etc) for communicating over CDPD is fairly straightforward. All the same configuration settings used for a LAN installation apply to a CDPD installation. Since the device is actually sitting on a very small LAN, (just the device and the IP5200), the IP Address would be a private IP, such as: 192.168.1.101. The IP5200 would have an Address in the same range, such as: 192.168.1.100.

DNS, FTP, SMTP, and Email settings would be for servers visible to the public Internet or in the case of Frame Relay connections to the CDPD network – IP Addresses visible to the Frame Relay cloud. (See your Network Administrator or Carrier for more details on which Addresses or server names to use).

When the device initiates Ethernet traffic (by either sending an email or starting an FTP session, etc), the router will dial the CDPD modem and establish a PPP connection. The CDPD Modem will supply the router with its IP address, virtually becoming the router's Internet Service Provider (ISP).

Diagram of how to connect the IP5200 Router and CDPD modem:

IP5200 is both a Dial-on-Demand Router *and* Network Firewall

Ethernet Crossover Cable

RS232

| 166.x.x.1 | 166.x.x.1 | 192.168.1.100 | 192.168.1.101 |

IP Address of CDPD Modem becomes Public Side Address of Router during PPP negotiations.

Private Class-C IP Addresses are on same subnet using subnet mask 255.255.255.0.

4. IP5200 Configuration

Setting up the IP5200 should be done using the instructions provided by DCB. The DIP Switches on the Ethernet side of the unit are used for handshake and flow control and should be set as follows:
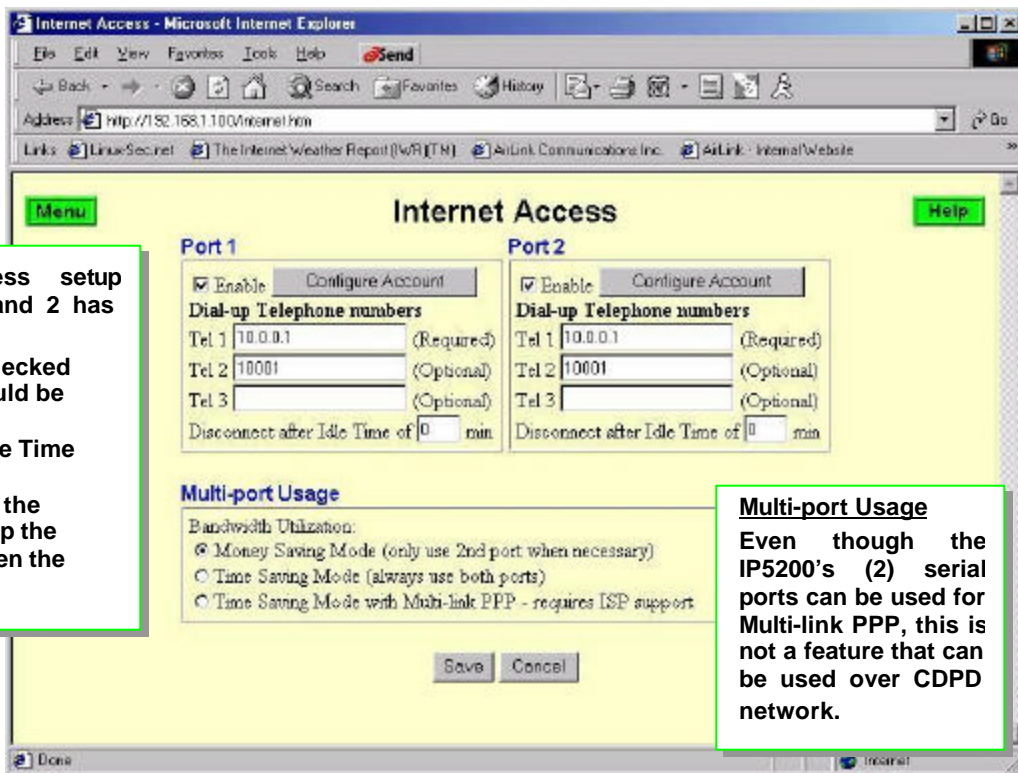
| 10 | 100 | RJ-45 Jack | 1 2 3 4 5 ↑ ↑ ↓ ↓ ↓ | Power |
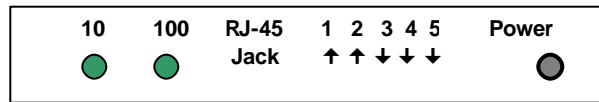
The following screen shots cover the device settings specific to connecting to a CDPD Modem.

At the '*Welcome to Setup*' page, select the 'Internet Access' button. The Configure button takes you to the Main Menu.
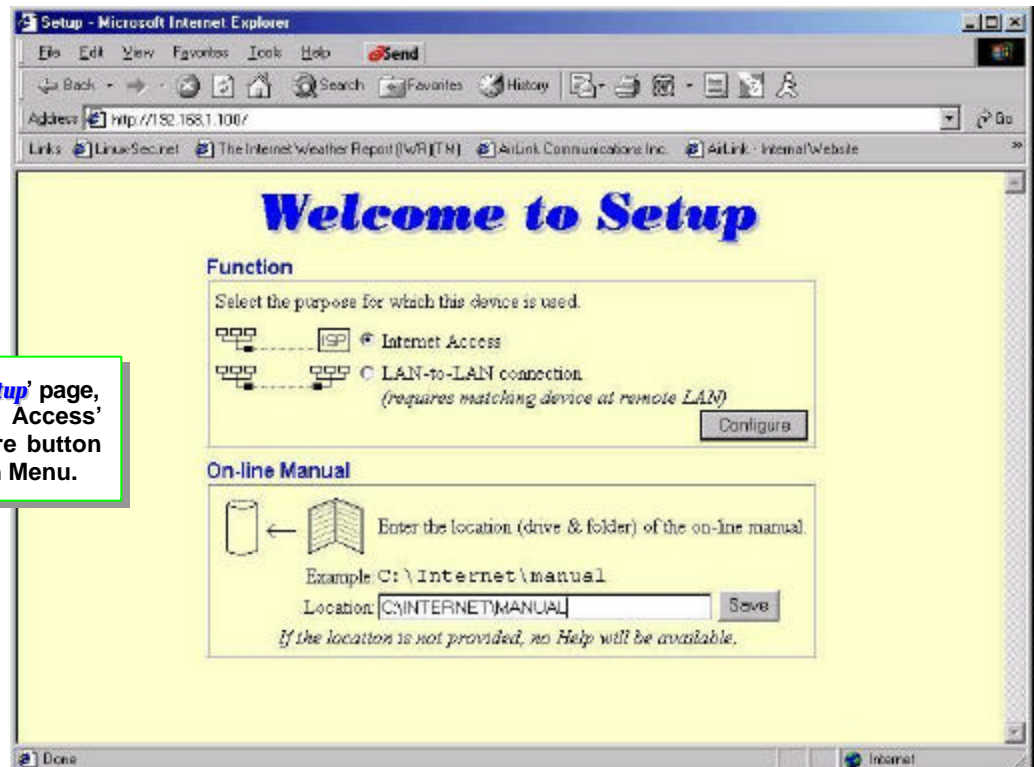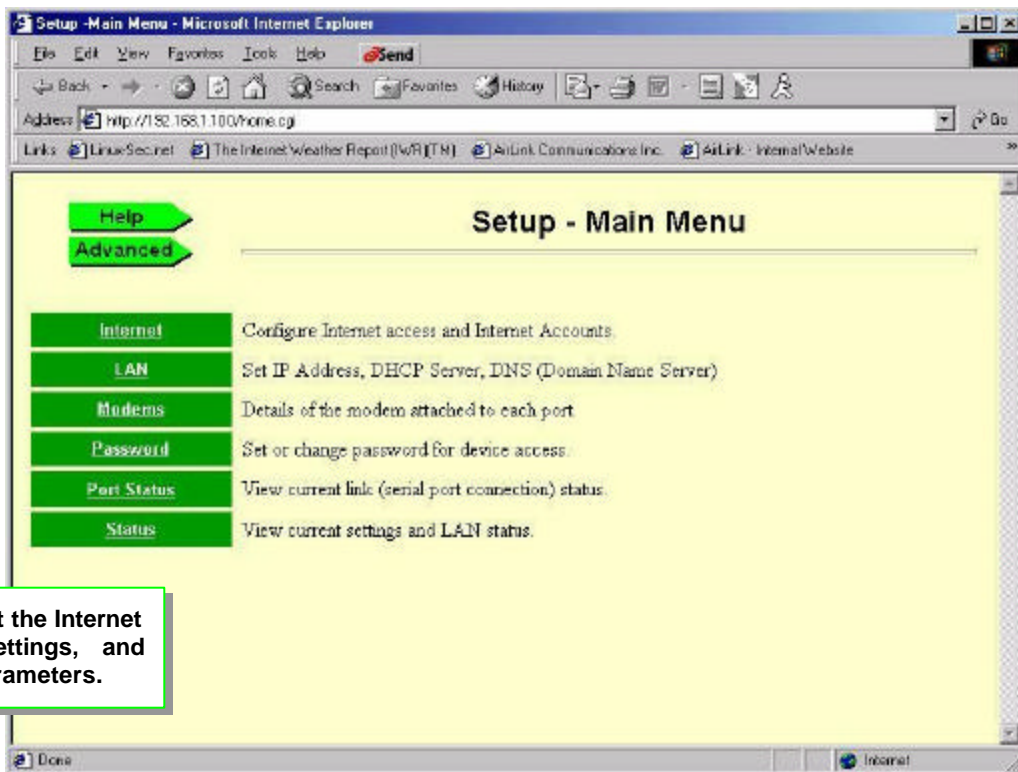
You will need to set the Internet Account, LAN Settings, and Dial-out Modem parameters.

The Internet Access setup screen for Ports 1 and 2 has three requirements:

- 'Enable' must be checked
- Tel-1 and Tel-2 should be entered as shown
- Disconnect after Idle Time should be set to '0'. This will make sure the IP5200 does not drop the PPP connection when the serial port is idle.

Multi-port Usage

Even though the IP5200's (2) serial ports can be used for Multi-link PPP, this is not a feature that can be used over CDPD network.
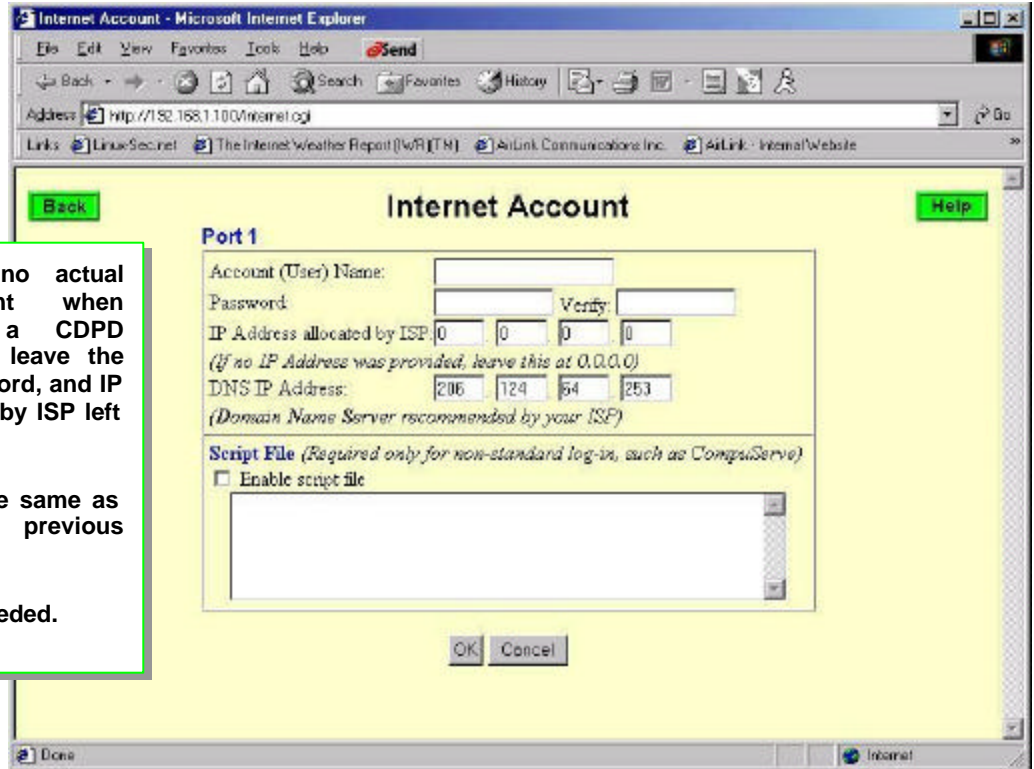
Since there is no actual Internet Account when connecting to a CDPD Modem, you can leave the User Name, Password, and IP Address allocated by ISP left blank.

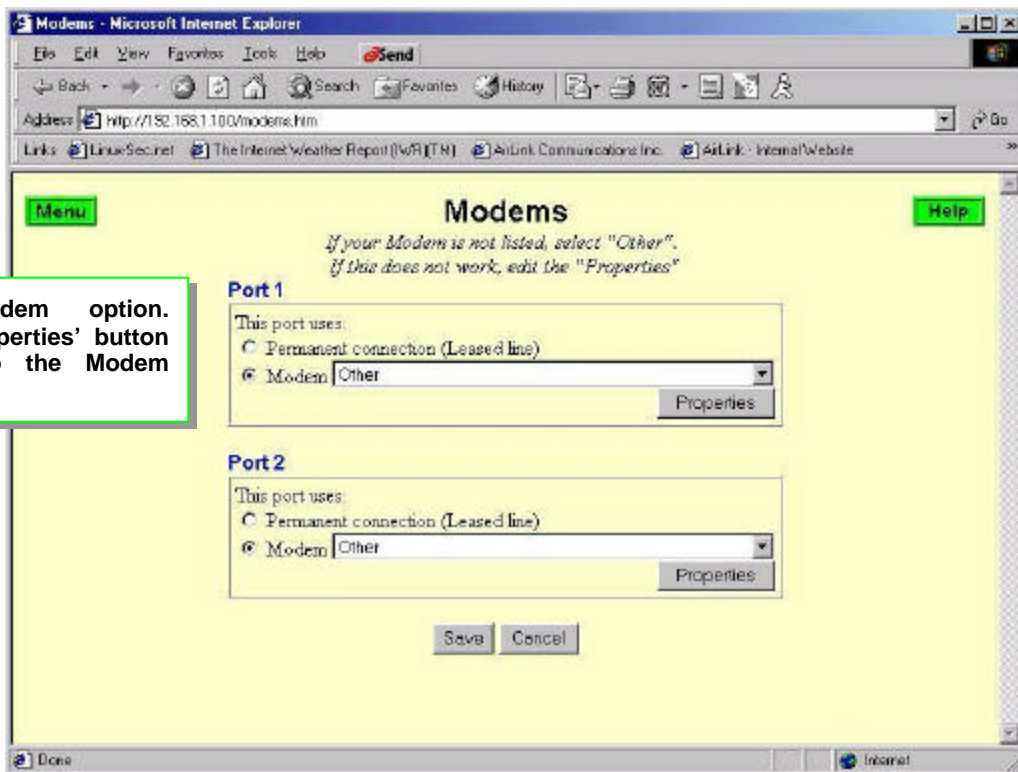DNS should be the same as entered on the previous screen.

No Script File is needed.
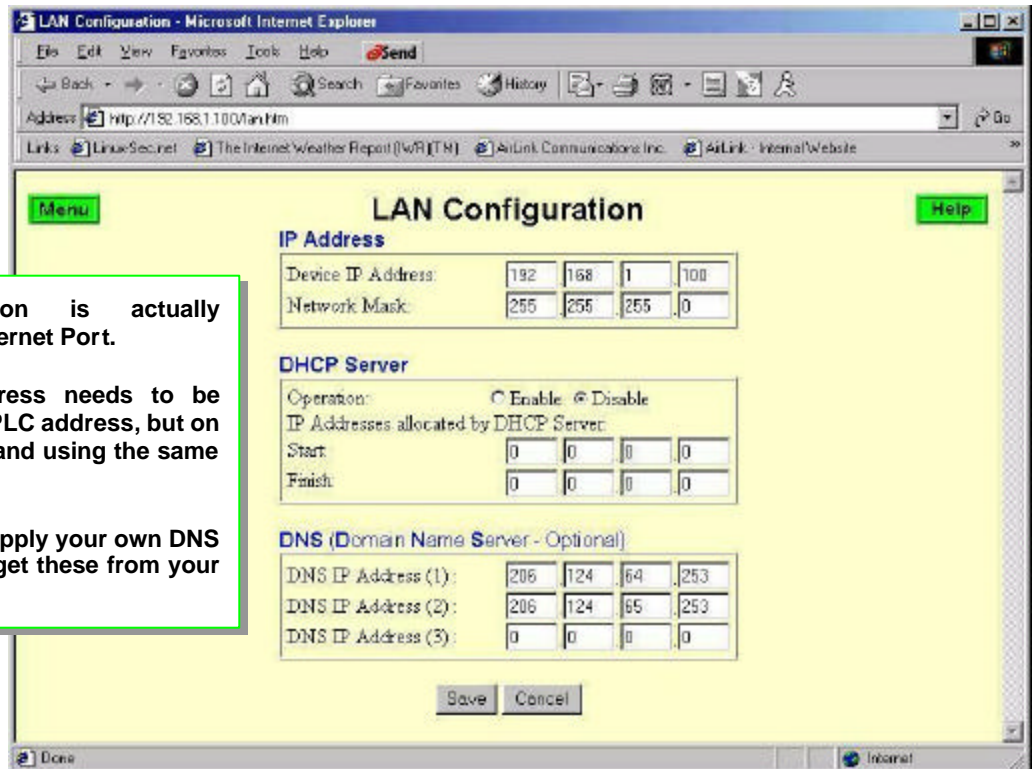
LAN Configuration is actually referring to the Ethernet Port.

The LAN IP Address needs to be different from the PLC address, but on the same network and using the same Net Mask.

You will need to supply your own DNS Settings. You can get these from your CDPD carrier.

Select the Modem option. Selecting the 'Properties' button will take you to the Modem Properties screen.
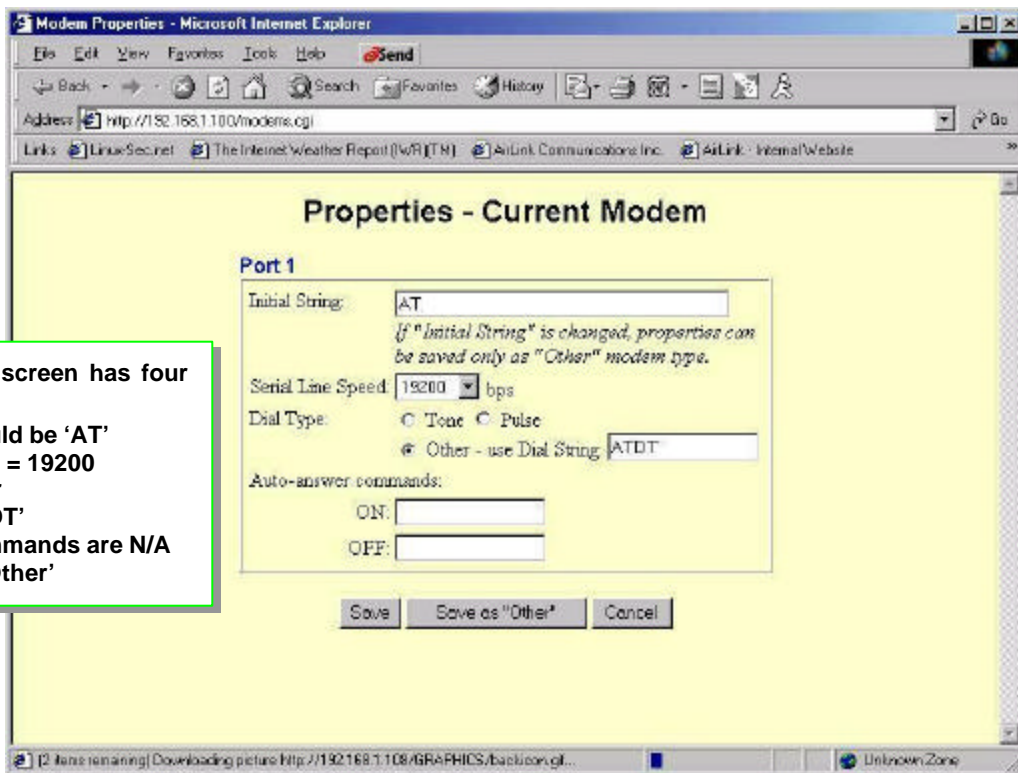

The Modem setup screen has four requirements:

- Initial String should be 'AT'
- Serial Line Speed = 19200
- Dial Type = Other
- Dial String = 'ATDT'
- Auto-answer commands are N/A
- Select 'Save as Other'

The Advanced Menu has a great many features, most of which do not apply to this application.

Most of these settings deal with the firewall functions inside the IP52000. Since there is only one device on the Ethernet port, and it is connected to a CDPD Modem, and not an ISP, the firewall is not really necessary.

To put the Ethernet port outside the IP5200, you must set the device up as an Exposed Computer.
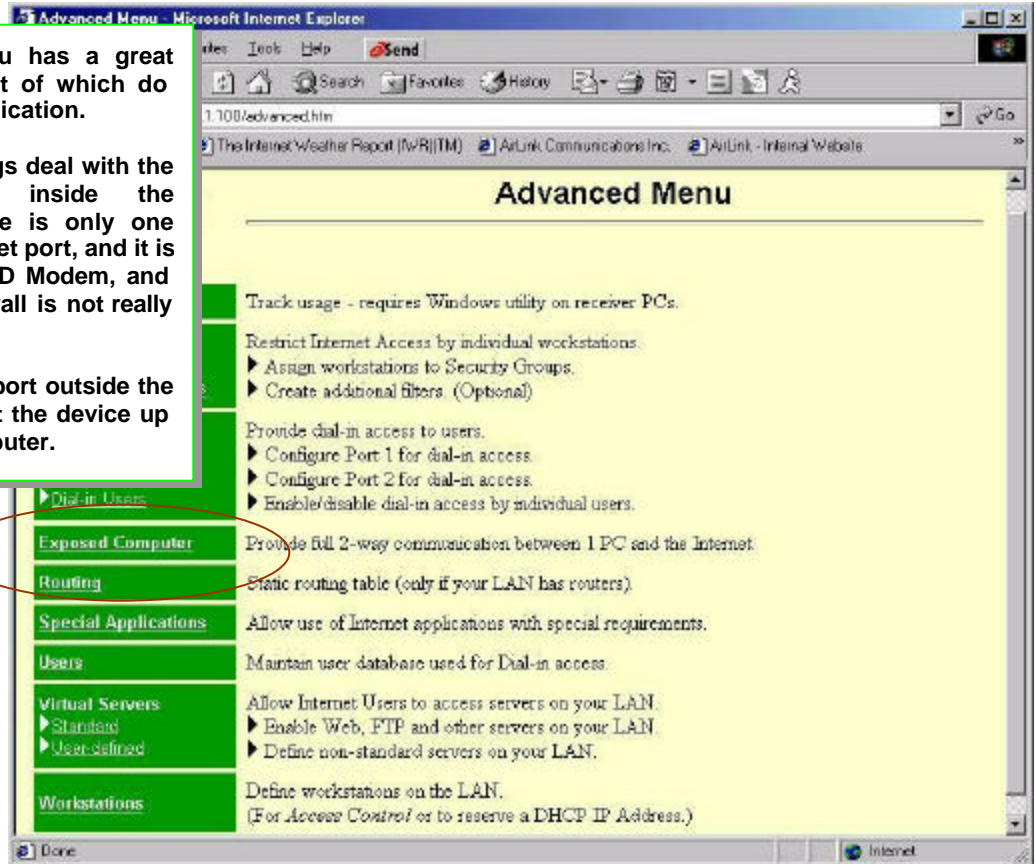
Select Enable Exposed Computer Feature and enter the IP of the Ethernet device. In this case it is 192.128.1.101.
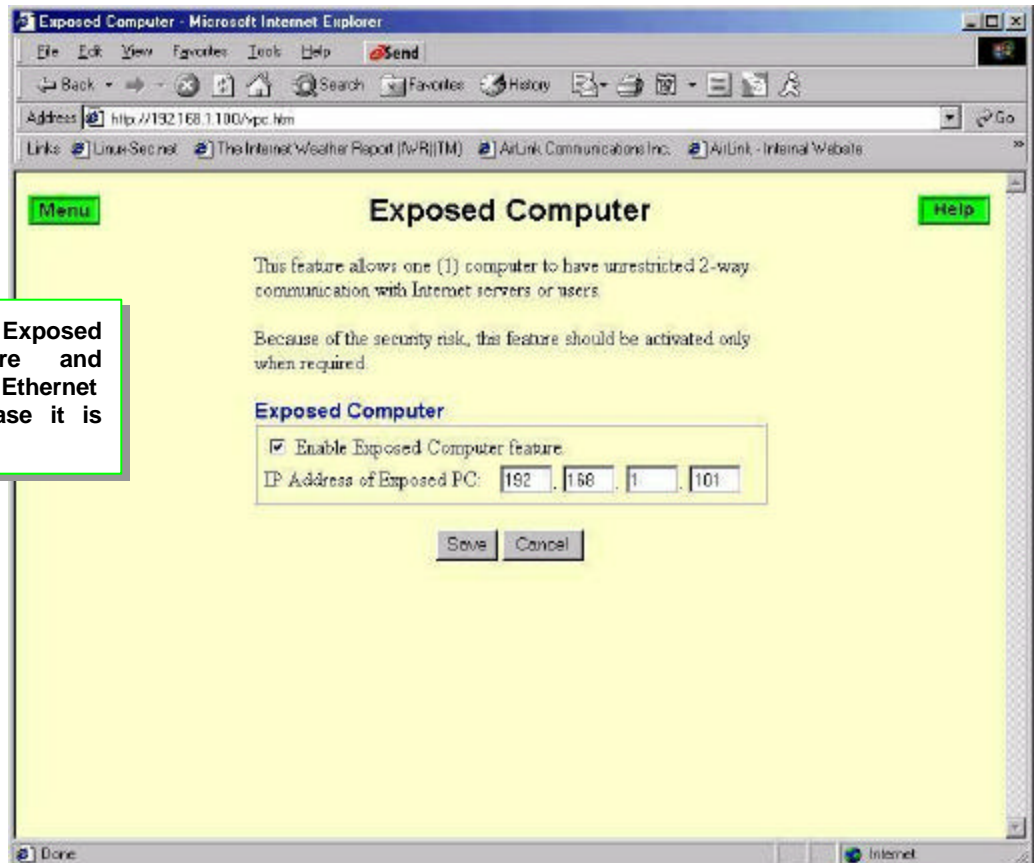
Checking to see if the router works is easy.

Go to the Port Status page on the Main Menu and Select the Dial-Up button. You can watch the Log for entries and errors, and see the Physical Link and PPP Link status right on the screen.

You know right away if the connection to the modem is working or not.

5. AirLink Raven CDPD Modem Configuration

The following are the proper S-Register configurations for the AirLink Raven CDPD Modem when connecting to the IP5200 for making a PPP connection. These settings can be made using Wireless ACE.

CDPD Parameters:	Connection Parameters:	COM Port Parameters:
[S110] Device Port=12345	[S0] TCP Auto Answer Mode=0	[\Q] Flow Control=2
[\N] Side Preference=3	[S7] TCP Establishment Timeout=20	[S23] Baud Rate=19200
[S116] Service ID Preference=3	[S50] Data Forwarding Timeout=1	[S23] Data Bits=8
[S111] Service ID=0/0/0	[S51] Data Forwarding Character=0	[S23] Parity=N
[S112] Channel List Mode=2	[S53] Destination IP Address=10.0.10.0	[S23] Stop Bits=1
[S113] Channel List=0,0,0,0,0	[S53] Destination TCP/UDP Port=12345	
[3W] 3 Watt Booster Support=0	[S53] Destination Connect Mode=T	
[*DSIDE] Disable Side Switch=0	[S210] AT Command Compatibility=1	
[*CTSE] CTS CDPD Enable=0	[S211] Ignore DTR=0	
[#X] Serial Debug Output=0	[MD] Startup Mode Default=0	
	[MD] UDP Mode Default=0	
	[S60] Telnet Echo Mode=0	
	[S82] UDP Half Open Mode=0	
	[S83] UDP Half Open Timeout=5	
	[AIP] Allow Any UDP IP=1	
	[HOR] UDP Half Open Response=1	
	[S220] Break On TCP Connect=0	
	[S221] Delay Connect Response=0	
	[E] Command Echo=1	
	[V] Command Response Mode=1	
	[Q] Quiet Mode=0	
	[X] Call Progress Result Mode=0	
	[TCPT] TCP Inactive Timeout=1	
	[TCPS] Specify TCPT in Seconds=0	
	[TCPX] Allow TCP Suspension=0	
	[*DATZ] Disable Reset on ATZ=0	
	[*ENQ] Enable ENQ on TCP Connect=0	
	[DAE] Disable AT Esc Sequence=0	
	[RKEY] Radio Transceiver Keying=0	
	[IPL] IP List Dial=0	
	[*DU] Dial UDP Always=0	
Modbus Parameters: N/A	**Friends List: (Optional)**	