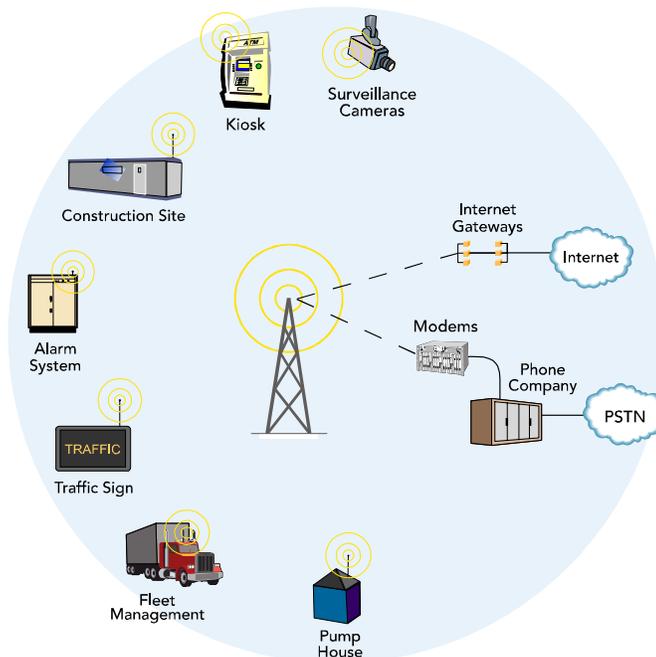

MultiModem®

Wireless EDGE, GPRS, CDMA Modems
with Ethernet Interface



User Guide

User Guide

MultiModem® Wireless EDGE, GPRS, and CDMA Modems with an Ethernet Interface
MTCBA-E-EN, MTCBA-G-EN-Fx, MTCBA-C-EN-Nx
S000375A, Revision A

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Table of Contents

Chapter 1 – Introduction and Product Description	5
Product and Interface Descriptions.....	5
Ethernet Interface	5
MultiModem EDGE	5
MultiModem GPRS	5
MultiModem CDMA.....	5
Safety Warnings	6
Ethernet Ports Caution.....	6
Handling Precautions.....	6
Safety Recommendations for Rack Installations.....	6
Ship Kit Contents	6
Application Example.....	6
Specifications.....	7
Chapter 2 – Getting Started	8
Setup and Configuration	8
1. Connections.....	8
2. Establish a Wireless Account.....	8
3. Set the TCP/IP Address on Your PC	8
4. Login and Activate the Wireless Modem.....	9
5. Configure the Ethernet-to-Wireless Modem Using the Web Management Software	9
Navigating the Screens	11
About the Front Panel LEDs.....	12
Ethernet LEDs	12
Modem LEDs	12
Test Your Workstation.....	12
Set Time and Date	12
Shutdown Caution	12
Using AT Commands.....	13
Query Your Modem's Operation	13
Set Up a Circuit-Switched Data (CSD) Connection for CDMA and GSM.....	13
Answering a Circuit-Switched Data (CSD) Connection.....	14
Chapter 3 – Using the Web Management Software.....	15
IP Setup.....	15
<i>IP Setup > General Configuration</i>	<i>15</i>
<i>IP Setup > HTTP Configuration</i>	<i>16</i>
<i>IP Setup > DDNS Configuration.....</i>	<i>17</i>
<i>IP Setup > SNTP Configuration</i>	<i>18</i>
<i>IP Setup > Static Routes.....</i>	<i>19</i>
<i>IP Setup > Remote Configuration</i>	<i>20</i>
PPP	21
PPP > PPP Configuration	21
PPP > Wakeup on Call	22
Networks & Services.....	23
Networks & Services > Network Configuration	23
Networks & Services > Service Configuration.....	24
Packet Filters.....	25
Packet Filters > Packet Filters.	25
Packet Filters > DNAT Configuration	26
Packet Filters > Advanced	27
DHCP Server.....	28
DHCP Server > Subnet Settings.....	28
DHCP Server > Fixed Addresses	29

Tools	29
Tools > Tools	29
Tools > Service Status	30
Tools > Firmware Upgrade	30
Tools > Load Configuration	31
Tools > Configuration Download	31
Statistics & Logs	32
Statistics & Logs > Ethernet	32
Statistics & Logs > Serial	32
Statistics & Logs > PPP	33
Statistics & Logs > PPP Trace	34
Statistics & Logs > SysInfo	35
Statistics & Logs > DHCP Stat	35
Chapter 4 – Wireless Antenna	36
The Antenna	36
GSM and CDMA Antenna	36
GSM Radio Characteristics	36
CDMA Radio Characteristics	36
Antenna	36
Appendix A – Firmware Upgrade Using TFTP Client	37
Appendix B – Multi-Tech Systems, Inc. Warranty and Repair Policies	38
Multi-Tech Warranty Statement	38
Repair Procedures for U.S. and Canadian Customers	38
Repair Procedures for International Customers (Outside U.S.A. and Canada)	39
Repair Procedures for International Distributors	39
Replacement Parts	39
Appendix C – Waste Electrical and Electronic Equipment	40
Index	41

Chapter 1 – Introduction and Product Description

This User Guide describes the MultiModem® Wireless EDGE, GPRS, and CDMA modems with an Ethernet Interface.

Product and Interface Descriptions

Ethernet Interface

The MultiModem wireless modems with an Ethernet interface provide shared Internet access with one IP address. The built-in routing capabilities provide DHCP services and firewall security using Network Address Translation. Due to the routing capabilities, these modems are sometimes called routers.

These modems support "always-on" network connection as well as "dial-on-demand" for Internet services. The "always-on" network connection automatically establishes a wireless data connection and allows for around the clock surveillance, monitoring or real-time data acquisition of any remote Ethernet device such as a Web camera. If the data link is dropped in the event of poor reception or a complete loss of service, it will automatically re-establish the data link. When configured for "dial-on-demand" the wireless modem only accesses the Internet when data is present. This configuration is ideal for sharing Internet access among networked PCs.

Software features include remote configuration, firmware upgrade, load configuration screen, and a save configuration screen.

MultiModem EDGE

The MultiModem® EDGE wireless modem delivers some of the fastest cellular wireless data speeds utilizing EDGE technology. It allows users to connect to the Internet and send and receive data up to three times faster than possible with an ordinary GSM/GPRS network making it ideal for highly data-intensive multimedia applications. The MultiModem EDGE wireless modem is equipped with quad-band GSM, which means it can be used worldwide on all existing GSM networks.

AT Commands: The MultiModem EDGE wireless modem is configured using the EDGE AT Commands. These commands are documented in the Reference Guide for the MultiModem Wireless EDGE Modems, document number S000371x.

MultiModem GPRS

The MultiModem® GPRS wireless modem offers standards-based multi-band GSM/GPRS Class 10 performance. The ready-to-deploy, standalone data/fax/voice modem allows developers to add wireless communication to products with a minimum of development time and expense. The MultiModem® GPRS wireless modem is based on industry-standard open interfaces and can be desktop or panel mounted.

AT Commands: The MultiModem GPRS wireless modem is configured using the GPRS AT Commands. These commands are documented in the Reference Guide for the MultiModem Wireless GPRS Modems, document number S000293x and also the Reference Guide for the GSM IP Commands, document number S000333x.

MultiModem CDMA

The MultiModem® CDMA wireless modem offers standards-based multi-band CDMA200 1xRTT performance. The ready-to-deploy, standalone data/fax/voice modem allows developers to add wireless communication to products with a minimum of development time and expense. The MultiModem® CDMA wireless modem is based on industry-standard open interfaces and can be desktop or panel mounted.

AT Commands: The MultiModem CDMA wireless modem is configured using the CDMA AT Commands. These commands are documented in the Reference Guide for the MultiModem Wireless CDMA Modems, document number S000294x.

Safety Warnings

Ethernet Ports Caution

The Ethernet ports are not designed to be connected to a Public Telecommunication Network.

Handling Precautions

All devices must be handled with certain precautions to avoid damage due to the accumulation of static charge. Although input protection circuitry has been incorporated into the devices to minimize the effect of this static build up, proper precautions should be taken to avoid exposure to electrostatic discharge during handling and mounting.

Safety Recommendations for Rack Installations

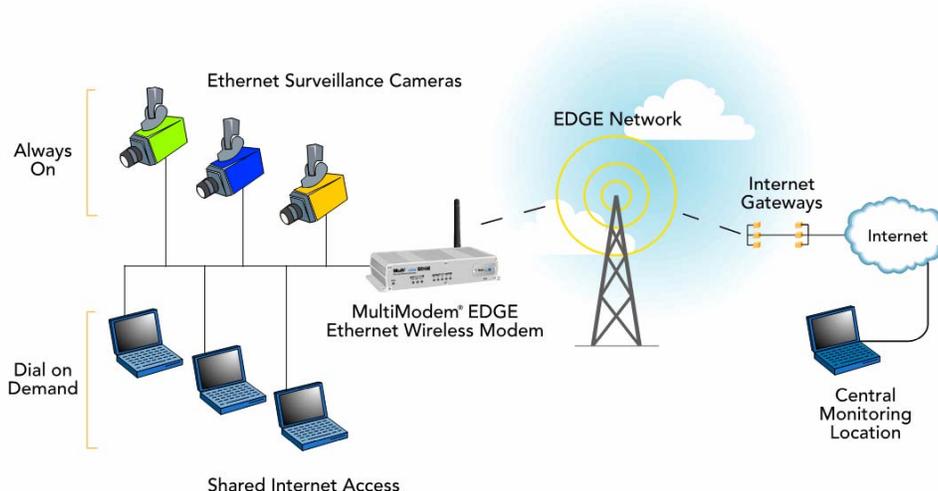
- Ensure proper installation in a closed or multi-unit enclosure by following the recommended installation as defined by the enclosure manufacturer.
- If installing the wireless modem in a closed or multi-unit enclosure, ensure adequate airflow so that the maximum recommended ambient temperature is not exceeded.
- Do not place the device directly on top of other equipment or place other equipment directly on top of this device.
- Ensure that the device is properly connected to earth ground via a grounded power cord. If a power strip is used, ensure that the power strip also provides adequate grounding.
- Ensure that the main supply circuit is capable of handling the load. See the power label on the device for requirements.
- Maximum ambient temperature is 70 degrees Celsius.
- This device should be installed by properly qualified personnel.
- Only connect like circuits; e.g., connect SELV (Secondary Extra Low Voltage) circuits to SELV circuits and TN (Telecommunications Network) circuits to TN circuits.

Ship Kit Contents

The wireless modem is shipped with the following:

- One Multi-Tech wireless modem with Ethernet interface.
- One power cord.
- One external power supply.
- One wireless modem antenna.
- Four rubber feet for desktop placement.
- One printed Quick Start Guide.
- Printed Activation Customer Notices (for Cingular, Sprint, Verizon networks, and general CDMA activation).
- One product CD that provides documentation and Adobe Acrobat Reader.

Application Example



Specifications

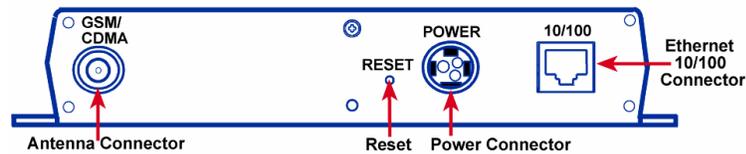
Features	EDGE Modems	GPRS Modems	CDMA Modems
Performance	EDGE: E-GPRS Class 10, GPRS: Class 12	GPRS Class 10	CDMA2000 1xRTT
Band, Frequency	Quad-band GSM 850/900/1800/1900 MHz	Dual-band 850/1900 or 900/1800 MHz GSM/GPRS	Dual-band 800/1900 MHz CDMA; 800 MHz with R-UIM support
Packet Data	EDGE: E-GPRS Up to 240K bps, coding scheme MCS 1-9, mobile station Class B, LLC layer, 4 time slots GPRS: Full PBCCH support, coding scheme 1-4, mobile station Class B	Up to 85.6K bps, coding schemes CS1 to CS4	Up to 153.6K bps forward and reverse
Circuit-Switched Data	Up to 9600 bps transparent and non-transparent, asynchronous	Up to 14.4K bps transparent and non-transparent, asynchronous	IS-95A, IS 95B up to 14.4K bps forward and reverse
Short Message Services-SMS	Text & PDU, Point-to-Point MO & MT, cell broadcast	Text & PDU, Point-to-Point, cell broadcast	Text & PDU, Point-to-Point, cell broadcast
Fax	Class 1 Group 3	GSM Class 1 and Class 2 Group 3	Class 2.0 Group 3
Voice Features	Half rate (HR), Full rate (FR), Enhanced full rate (EHR), Adaptive multi rate (AMR), hands free echo cancellation, noise reduction	Half rate (HR), Full rate (FR), Enhanced full rate (EHR), echo cancellation, noise reduction (option), telephony and Dual Tone Multi Frequency (DTMF) transmission, emergency calls	Telephony and Dual Tone Multi Frequency (DTMF) functionality, AMPS Voice, QCELP (13K), echo cancellation
Antenna Connectors	RF Antenna: 50 ohm SMA (female connector)	RF Antenna: 50 ohm SMA (female connector)	RF Antenna: 50 ohm SMA (female connector)
SIM Connector	Standard 3V SIM receptacle	Standard 3V SIM receptacle	
Interface Connectors	Ethernet Model: RJ-45, 10BaseT/100BaseTX, 802.3	Ethernet Model: RJ-45, 10BaseT/100BaseTX, 802.3	Ethernet Model: RJ-45, 10BaseT/100BaseTX, 802.3
Power Connectors	Ethernet Model: 2.5mm miniature screw	Ethernet Model: 2.5mm miniature screw	Ethernet Model: 2.5mm miniature screw
Voice Connectors	Ethernet Model: RJ-9 4-pos modjack	NA	NA
Power Requirements	5V to 32 VDC	5V to 32 VDC	5V to 32 VDC
Physical Description	Ethernet Model: 2.8" L x 6.4" W x 1.2" H; 11.5 oz. (7.1 cm x 16.3 cm x 3.0 cm; 326G)	Ethernet Model: 2.8" L x 6.4" W x 1.2" H; 11.5 oz. (7.1 cm x 16.3 cm x 3.0 cm; 326G)	Ethernet Model: 2.8" L x 6.4" W x 1.2" H; 11.5 oz. (7.1 cm x 16.3 cm x 3.0 cm; 326G)
Operating Environment	0 to +50° C	0 to +50° C	0 to +50° C
Certifications	CE Mark, R&TTE EMC: FCC Part 2, 15 Class A, 22, 24; EN 55022, EN 55024 Safety: cUL, UL 60950; EN 60950 Network: PTCRB	CE Mark, R&TTE EMC: FCC Part 2, 15 Class A, 22, 24; EN 55022, EN 55024 Safety: cUL, UL 60950; EN 60950 Network: PTCRB	EMC: FCC Part 2, 15 Class A, 22, 24; EN 55022, EN 55024 Safety: cUL, UL 60950; EN 60950 Network: PTCRB
Miscellaneous	AT Command Compatible Desktop or panel mounting Carrier approved Numerous LEDs provide status Two year warranty	AT Command Compatible Desktop or panel mounting Carrier approved Numerous LEDs provide status Two year warranty	AT Command Compatible Desktop or panel mounting Carrier approved Numerous LEDs provide status Two year warranty Over-the-air activation CDG 1 and 2 network certified

Chapter 2 – Getting Started

Setup and Configuration

1. Connections

In order to operate your wireless modem, you must make the proper Power and Ethernet connections.



- Using an RJ-45 Ethernet cable, connect the 10/100 jack to an internal network switch or hub.
- Plug one end of the power cord into the device and the other end onto a live power outlet.

Notes:

- The **PWR** LED lights after power-up.
- Pressing and holding the **Reset button** for 5 seconds will restore all factory default settings.

2. Establish a Wireless Account

Obtain a wireless account through a Wireless Service Provider. This will allow you to use the service provider's network; for example, Cingular, Sprint, and Verizon.

Contact Multi-Tech, a certified national activation agent for Cingular and Sprint, to set up one of these accounts.

For Verizon and other accounts, contact their activation agents directly.

See the Cingular, Sprint, Verizon, and general Customer Activation Customer Notices included with your modem for a list of the information you must give to the activation agent. You will receive, depending upon your provider, one or two phone numbers and a service programming code or lock code. Write these numbers down as you will have to use them to configure the wireless modem.

If you have any questions or want to set up your account, contact Multi-Tech Systems, Inc. at:
800-972-2439 or 763-717-5863.

3. Set the TCP/IP Address on Your PC

Once the wireless account is established and the modem is properly connected, set up the TCP/IP address on your PC, if not previously set.

- 3.1** Open the PC's **Control Panel**.
- 3.2** Select **Networks** or **Network Connections**.
- 3.3** Under **Protocols**, select **TCP/IP**.
- 3.4** Under **Properties**, choose one of the following:
 - * Check **Obtain IP Address Automatically** and **Obtain DNS Server Address Automatically**. If you check these, then the DHCP function obtains the IP Address automatically from the Ethernet wireless modem, or
 - * Check **Use the Following IP Address** and **Use the Following DNS Server Address**. If you check these, then enter the following addresses:
 IP Address: 192.168.2.2
 Subnet Mask: 255.255.255.0
 Gateway: 192.168.2.1
 Specify a DNS Server. For example, 205.171.3.65

4. Login and Activate the Wireless Modem

- 4.1 From the workstation, open the DOS screen by clicking the **Start** button and selecting **Programs > Accessories > Command Prompt**.
- 4.2 At the **C:\>** prompt, enter **Telnet 192.168.2.1 5000**
Note: 5000 is the port number.
- 4.3 At **Login**, enter the user name **admin**.
- 4.4 At **Password**, enter the password **admin**.
- 4.5 The PC is now ready to issue the AT commands that will configure the wireless modem.

Do not exit the DOS screen. You can enter the AT commands that configure your modem using the DOS prompt. Continue with Step 4.6.

- 4.6 Activate wireless functionality using AT commands.

Refer to the **Customer Activation Notices** again and enter the AT commands required by your service provider. Each provider has a certain number of commands that must be entered. For example, Sprint has eight command steps and Verizon has four command steps.

5. Configure the Ethernet-to-Wireless Modem Using the Web Management Software

You are now ready to configure the Ethernet-to-wireless modem. This is accomplished by using the modem's factory-installed Web Management software, which is accessed by opening a Web Browser, entering the Gateway Address, and completing the login.

5.1 Open a Web Browser

From the workstation, open a Web Browser.

Type the default Gateway Address: <http://192.168.2.1>



5.2 Login

After entering the Address, the **Login** screen displays.

- Type the default User name: **admin** (all lower-case).
- Type the default password: **admin** (all lower-case).

Note: The **User name** and **Password** are case-sensitive (both must be typed in lower-case). If Windows displays the **AutoComplete** screen, you may want to click **No** to tell the Windows OS not to remember the password; this helps maintain PC security.

- Click the **Login** button. The Web Management Home screen displays.

5.3 Use the Setup Wizard for Quick Configuration

A quick way to configure the modem is to use the Setup Wizard in the Web Management software. You can set/enable additional features and functions using the complete Web Management software program. This software is explained in detail in Chapter 3.

- To begin configuration, click the **Wizard Setup** button located under the menu bar.



- After clicking the **Wizard Setup** button, the Wizard screen displays.

5.4 How to Use Setup Wizard

The following is a screen shot of the Setup Wizard. See the tables below for setup information.

IP Configuration	
IP Address	IP Address 192.168.2.1 defaults into this text box.
Mask	Enter the IP Mask 255.255.255.0
DNS	Enter the primary DNS IP address for the system. Default is 0.0.0.0

PPP Configuration	
PPP	Click Enable to activate PPP. Click Disable if you do not want this protocol activated.
Dial-on-Demand	Click Enable to activate dial-on-demand feature. If you Disable dial-on-demand, the modem always stays connected.
Idle Time Out	Sets the amount of time the PPP link stays active before disconnecting. Setting the value to zero causes the link to stay active continuously.
Dial Number	Enter the dial number. This number connects you to the Internet. For GSM/GPRS, the number is *99***1#. For CDMA, the number is #777
Init String	You can set up to 5 modem initialization strings. For GSM/GPRS: Enter the Access Point Name by typing AT+CGDCONT=1,"IP",<APN> The APN is assigned by your wireless service provider.

PPP Authentication	
Authentication Type	Click the button corresponding to the authentication protocol you want to use to negotiate with the remote peer. PAP, CHAP, or PAP-CHAP. Default = PAP-CHAP
User Name	Enter the PPP User Name. This name authenticates the remote peer.
Password	Enter the PPP Password. This password authenticates the remote peer.

Important Note about Submit and Save & Restart: Click the **Submit** button located at the bottom of most screens in order to save any changes you make. Then you must click the **Save & Restart** button in order for your settings to take effect. **Save & Restart** does not have to be executed after each screen; you can change and Submit several screens, and then click **Save & Restart**. The **Save & Restart** button is located on the Menu bar.

Navigating the Screens

This section explains the menu structure and the navigation buttons.

Menu Bar



IP Setup: Sets up a General Configuration, HTTP, DDNS, SNTP, Static Routes, and Remote Configuration.

PPP: Sets up the PPP authentication, dial-on-demand, modem authentication, and Wakeup on Call.

Networks & Services: Defines networks and services to make them available to other functions such as allowed packet filters, DHCP Server, and Statistics & Logs.

Packet Filters: Defines filter rules, DNAT configuration, and ICMP rules.

DHCP Server: Configures the DHCP server settings.

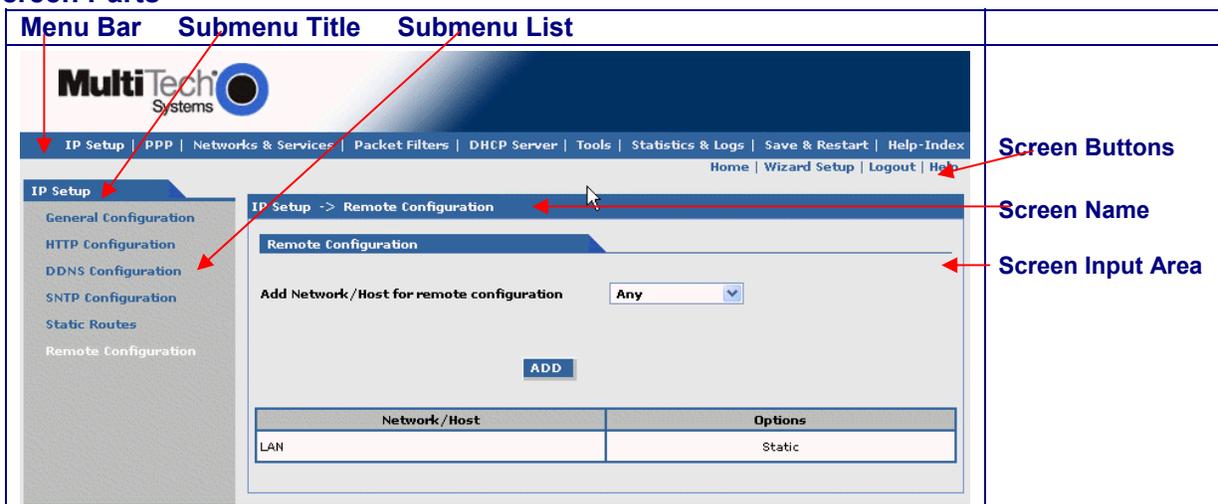
Tools: Sets DDNS Force Update and Reset Modem, displays Service Status, and provides screens for Firmware Upgrade, Load Configuration, and Save Configuration.

Statistics & Logs: View all the statistics and logs maintained by the modem.

Save & Restart: Click this to Save your settings and reboot your PC.

Help Index: Click this to access the Help text.

Screen Parts



Screen Buttons

Home: Click this button to return to the Home screen.

Wizard Setup: Click this button to display the Wizard Setup screen on which you can quickly set up your wireless modem with basic configuration settings.

Logout: Click this button to Logout and return to the login screen.

Help: Click this button to display the Help text.

Submenus

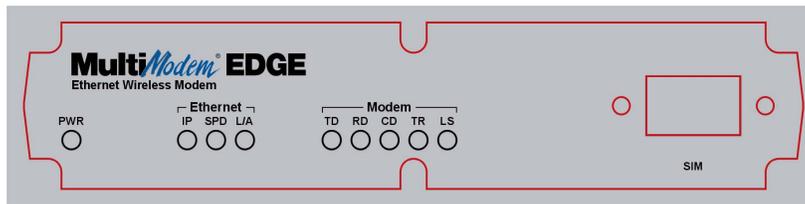
The submenus display on the left side of the screen.

The following table shows the sub-menu selections under each main menu category.

IP Setup	PPP	Networks & Services	Packet Filters	DHCP Server	Tools	Statistics & Logs
General Config. HTTP Config. DDNS Config. SNTP Config. Static Routes Remote Config.	PPP Config. Wakeup on Call	Network Configuration Service Configuration	Packet Filters DNAT Config. Advanced	Subnet Settings Fixed Addresses	Tools Service Status Firmware Upgrade Load Config. Save Config.	Ethernet Serial PPP PPP Trace SysInfo DHCP Stat

About the Front Panel LEDs

The Ethernet EDGE has 3 Ethernet LEDs and 5 modem LEDs.



The Ethernet GPRS has the same LEDs as the EDGE modem and a SIM card slot.



The Ethernet CDMA has the same LEDs as the EDGE modem. It does not, however, have a SIM card slot.



Ethernet LEDs

- IP** IP FUNCTION. This LED blinks when the IP function of the modem/router is operating normally. It shows a steady light when powering-up, initializing, or flashing the firmware.
- SPD** SPEED. This LED lights when the Ethernet is linked at 100 Mbps. If it is not lit, the Ethernet is linked at 10 Mbps.
- L/A** LINK ACTIVITY. This LED blinks when there is transmit and receive activity on the Ethernet. It shows a steady light when there is a valid Ethernet connection.

Modem LEDs

- TD** TRANSMIT DATA. This LED blinks when the modem is transmitting data to your wireless carrier.
- RD** RECEIVE DATA. This LED blinks when the modem is receiving data from your wireless carrier.
- CD** CARRIER DETECT. This LED lights when the modem detects a valid carrier signal from a wireless carrier.
- TR** (DATA) TERMINAL READY. This LED lights when the modem is trying to establish a wireless connection.
- LS** LINK STATUS. This LED blinks when there is a valid wireless signal. When it is on or off, the wireless strength is low.

Test Your Workstation

Test your workstation to see that it can access the Internet. If a connection is established, then the settings have been entered correctly. **Note:** If you had changed your IP Address, be sure to enter the new one when you access the Internet.

Set Time and Date

The date and time must be set using the Web Management software.

The time and date set in **IP Setup** will not be correct unless SNTP client is enabled and you have a live Internet connection. See SNTP client.

Shutdown Caution

Never unplug the power until after you have performed the **Save & Reset** process. If the setup changes are not properly saved before unplugging the power, data could be lost.

Using AT Commands

Important Note: Before you can use these commands, you must complete Steps 4.1 through 4.4 on page 9.

Query Your Modem's Operation

1. Check the signal quality.
 - Type AT+CSQ
Modem responds with the received signal strength (rssi).
2. Check the identity of the modem.
Use command: ATI (*AT* is followed by the capital letter *i*).
 - Type ATI0 (The command ends in a zero).
Manufacturing data displays: *Wavecom Modem 800 1900*
 - Type ATI3
Software version displays. Ex: *S/W VER: xxxxx*
 - Type ATI6
Capability data displays. Ex: *+CGSM, +CIS707, ...*
3. Check the network registration and roaming status.
 - Type AT+CREG?
The modem will respond in one of the following ways:
 - +CREG: 0,0 (this tells you the modem is not registered on any network)
 - +CREG: 0,1 (this tells you the modem is registered on the home network)
 - +CREG: 0,5 (this tells you the modem is registered on a network but it is roaming)

Set Up a Circuit-Switched Data (CSD) Connection for CDMA and GSM

A Circuit-Switched Data Connection makes the wireless modem work like a regular analog modem. You must have CSD service in order to make a CSD call.

1. **Establish a Connection:** Using HyperTerminal or a terminal application, establish a CSD connection by entering command: **ATD<phone number>**

Notes:

- The phone number you are calling is entered between the displayed brackets. Do not type additional brackets. Ex: type only **ATD 8585551212** between brackets.
 - This command tells the modem to inform the wireless network that you are initiating a CSD modem call. If you are dialing to another modem, the remote modem should answer and a connection between the two modems will be established. If you include a semi-colon (;) at the end of the dialing string, the modem will instead initiate a Voice call to the phone number dialed.
2. **Disconnect:** Use the following commands:
 - +++** Wait about 2 seconds to see **OK**.
 - Then type: **ATH**
 - Note:** **+++** is the escape sequence and **ATH** is the Hang-up command.

Answering a Circuit-Switched Data (CSD) Connection

A Circuit-Switched Data Connection makes the wireless modem work like a regular analog modem. You must have CSD service in order to answer a CSD call.

For CDMA

Establish A Connection:

Using HyperTerminal or a terminal application, enter the following command:
AT+CICB=0 <cr> This sets the modem to answer in data mode.
Then call into the modem by dialing the number provided by your carrier.

Answer a Call: Enter **ATA <cr>** when you see on the terminal screen that RING responses are coming through.

Set Auto-Answer: Enter **ATS0=x** (where x is the number of rings). This sets the modem to auto-answer. The call is answered after x number of rings.
Call into the modem by dialing the number provided to you by the carrier.

Disconnect: Use the following commands:
+++ Wait about 2 seconds for *OK*.
Then type: **ATH**

For GSM

There are three phone numbers for GSM: the voice number, the data number, and the fax number. All are provided by the carrier. To answer a call:

Establish A Connection:

Call into the modem by dialing the data number provided by your carrier.

Answer a Call: When you see the RING responses on the terminal screen, enter **ATA <cr>** to answer the call.

Set Auto-Answer: Enter **ATS0=x** (where x is the number of rings). This sets the modem to auto-answer. The call is answered after x number of rings.
Then call into the number provided to you by the carrier.

Disconnect: Use the following commands:
+++ Wait about one second to see *OK*.
Then type: **ATH**

Chapter 3 – Using the Web Management Software

This section describes each screen in the Web Management software.

Important Note about Submit and Save & Restart: Click the **Submit** button located at the bottom of most screens in order to save any changes you make. Then you must click the **Save & Restart** button in order for your settings to take effect. **Save & Restart** does not have to be executed after each screen; you can change and Submit several screens, and then click **Save & Restart**. The **Save & Restart** button is located on the Menu bar.

IP Setup

IP Setup > General Configuration

In General Configuration, you can set the general system-based parameters.

The screenshot displays the MultiTech Systems web management interface for the IP Setup -> General Configuration page. The interface includes a navigation menu on the left and a main configuration area with several sections:

- General Configuration:**
 - Date: 02/1/1970 (DD/MM/YYYY)
 - Time: 04:05:41 (HH:MM:SS)
- IP Configuration:**
 - IP Address: 192.168.2.1
 - Mask: 255.255.255.0
 - Default Gateway: 0.0.0.0
 - Primary DNS: 0.0.0.0
 - Secondary DNS: 0.0.0.0
- Auto Dialout Configuration:**
 - Autodialout: Enable Disable
 - Raw Dialout (for Telnet): Enable Disable
 - Autodialout login: Enable Disable
 - Autodialout Port: 5000
 - Handle EIA Signal: Enable Disable
 - Inactivity (Secs): 0
- Syslog Configuration:**
 - Syslog: Enable Disable
 - Syslog Server IP Address: [Empty field]
- Auto Discovery:**
 - Autodiscovery: Enable Disable
 - Server Port: 1020
 - Broadcast Timer: 10 seconds
- TFTP Configuration:**
 - Firmware Upgrade: Enable Disable

A **SUBMIT** button is located at the bottom of the configuration area.

General Configuration

Date and Time: The system date and time display in these formats: **DD/MM/YYYY / HH:MM:SS**. SNTP Client must be enabled and you must have a live Internet connection for the date and time to display correctly.

IP Configuration

Enter the following addresses for the Ethernet interface. Defaults are 0.0.0.0

IP Address (Default = 192.168.2.1), Mask, Default Gateway, Primary DNS, Secondary DNS.

Auto Dialout Configuration

Auto Dialout: Check the box to enable/disable Auto Dialout. Default = Enable.

Raw Dialout: Check the box to enable/disable raw mode for an Auto Dialout session. Default = Disable.

Auto Dialout Login: Check the box to enable or disable Auto Dialout Login feature. Default = Enable.

Auto Dialout Port: Enter the serial Auto Dialout Port number. Default = 5000.

Handle EIA Signal: Check the box to enable/disable the EIA standard signal characteristics (time and duration) used between different electronic devices.

Inactivity: Enter the time in seconds that the auto dialout session will stay active before going inactive.

Syslog Configuration

Syslog: Check the box to enable or disable Syslog. Default = Disable.

Syslog Server IP Address: If a Remote Syslog Server IP Address is specified, the syslog feature acts as a remote Syslog.

Auto Discovery

Autodiscovery: Check the box to enable or disable Autodiscovery to broadcast (MAC level), the MAC Address, IP Address, and DHCP information to the configured server port. Default = Enable.

Server Port: Enter the Server Port Number. Default port is 1020.

Broadcast Timer: Enter the amount of time in seconds for the auto-discovery packet granularity of periodic broadcasting. Default is 10 seconds.

TFTP Configuration

Firmware Upgrade: Check the box to enable or disable the firmware upgrade. Default is Disable.

Submit Button

Click the **Submit** button to save these settings. You must click **Save and Restart** once you have completed and submitted all the screens on which you have made changes.

IP Setup > HTTP Configuration

HTTP Configuration

HTTP Port: Enter the port number for the HTTP server to listen for requests. Default is 80.

Authentication

User Name: Enter the User Name that can access to the Web Management software. Default is **admin**.

Password: Enter the Password for access to the Web Management software. Default is **admin**.

Note: You should change the password to one of your choosing. A password can be up to 12 characters.

Password Caution: Use a safe password! Your first name spelled backwards is not a sufficiently safe password; a password such as xFT35\$4 is better. It is recommended that you change the default password to better protect the security of your modem.

Submit Button

Click the **Submit** button to save these settings. You must click **Save and Restart** once you have completed and submitted all the screens on which you have made changes.

IP Setup > DDNS Configuration

The DDNS Client is used to update the IP address of the modem/router in a DDNS server for the configured domain name whenever the IP Address changes, thus, leaving the domain name to be pointing to the current IP Address of the modem/router all the time.

The screenshot shows the 'IP Setup -> DDNS Configuration' web page. On the left is a navigation menu with options: General Configuration, HTTP Configuration, DDNS Configuration (selected), SNTP Configuration, Static Routes, and Remote Configuration. The main content area is titled 'IP Setup -> DDNS Configuration' and is split into two tabs: 'General' and 'Authentication'.
 In the 'General' tab, there are several configuration options:
 - **DDNS**: Radio buttons for 'enable' and 'disable' (selected).
 - **User Check IP**: Radio buttons for 'enable' (selected) and 'disable'.
 - **Check IP Server**: Text input field containing 'checkip.dyndns.org'.
 - **Check IP Port**: Text input field containing '80'.
 - **Server**: Text input field containing 'members.dyndns.org'.
 - **Port**: Text input field containing '80'.
 - **Max Retries**: Text input field containing '5'.
 - **Update Interval (days)**: Text input field containing '28'.
 - **System**: Radio buttons for 'Dynamic' (selected) and 'Custom'.
 - **Domain**: Empty text input field.
 In the 'Authentication' tab, there are:
 - **Username**: Empty text input field.
 - **Password**: Empty text input field.
 A blue 'SUBMIT' button is located at the bottom right of the form.

General

DDNS: Check the Enable or Disable box to indicate whether or not you want a DDNS Client. Default = Disable.

User Check IP: Check the Enable or Disable box. If enabled, the program will query the server to determine the IP address before it performs the DDNS update (the IP address is still assigned by the wireless provider and the DDNS will be updated based on the address returned by Check IP Server). If disabled, the program will perform the DDNS update using the IP address that it obtains from the PPP link.

Check IP Server: Enter the IP Server name that will get the current assigned WAN IP Address to the firewall.

Check IP Port: Enter the port number of the IP Server. Default is 80.

Server: Enter the name of the IP Server.

Port: Enter the port number of the IP Server.

Max Retries: Enter the maximum number of tries that will be allowed to access the IP Server.

Update Interval: Enter the intervals in days that the IP Address will be updated for the DDNS server.

System: Sets the system as Dynamic or Custom.

System Domain: Enter the domain name of the system.

Authentication

User Name: Enter the User Name that can access the DDNS Server.

Password: Enter the Password that can access the DDNS Server.

Submit Button

Click the **Submit** button to save these settings. You must click **Save and Restart** once you have completed and submitted all the screens on which you have made changes.

IP Setup > SNTP Configuration

The screenshot shows the 'SNTP Configuration' page with the following settings:

- General Configuration:**
 - SNTP Client: Enable, Disable
 - Server: [Empty text box]
 - Polling Time: minute(s)
- Time Zone Configuration:**
 - Time Zone:
 - Time Zone offset: [+/- hh:mm]
- Daylight Configuration:**
 - Daylight Saving: Enable, Disable
 - Daylight Saving offset: minute(s)
- Daylight Saving Start time:**
 - Start Ordinal: (dropdown)
 - Start Month: (dropdown)
 - Start Day: (dropdown)
 - Start Time: [hh:mm]
- Daylight Saving End time:**
 - End Ordinal: (dropdown)
 - End Month: (dropdown)
 - End Day: (dropdown)
 - End Time: [hh:mm]

A **SUBMIT** button is located at the bottom right of the configuration area.

General Configuration

SNTP Client: Enable or disable the SNTP Client to contact the configured server on the UDP port 123 and set the local time. Default is Disable.

Server: Enter the SNTP server name or IP address to which the SNTP Client must contact in order to update the time. No default.

Polling Time: Enter the polling time at which the SNTP client requests the server to update the time. Default is 300 minutes. Time must be entered in minutes.

Time Zone Configuration

Time Zone: Enter your time zone. Default = UTC (Universal Coordination). See the following Web site for Time Zone information:

<http://www.greenwichmeantime.com/info/timezone.htm>

Time Zone Offset: Enter +/- hh:mm. Default = +00:00. Offset is the amount of time varying from the standard time of a Time Zone.

Daylight Configuration

Daylight Saving: Enables/disables Daylight Saving mode. Default is Enable.

Daylight Saving Offset: Set the offset to use during Daylight Saving mode. Default is +60 minutes. Enter the time in + / - minutes.

Daylight Saving Start Time

Start Ordinal: Set the start ordinal to use during Daylight Saving mode. Options are first/second/third/fourth/last. Default is first.

Daylight Saving time usually starts at the same time on the same day of the week in the same month every year. Each day of the week occurs four or five times a month. Therefore, you will be selecting the week in which daylight saving time starts: the first, second, third, fourth or the last of the month. In the U.S.A., daylight saving time starts at 2:00 a.m. on the first Sunday in April.

Start Month: Set the start month to use during Daylight Saving mode. Default is April.

Start Day: Set the start weekday to use during Daylight Saving mode. Default is Sunday.

Start Time: Set the start time to use during Daylight Saving mode. Default is 02:00 (hh:mm).

Daylight Saving End Time

End Ordinal: Set the end ordinal to use during Daylight Saving mode. Select the week in which daylight saving time ends. Options are first/second/third/fourth/last. Default is last.

End Month: Set the end month to use during Daylight Saving mode. Default is October.

End Day: Set the end weekday to use during Daylight Saving mode. Default is Sunday.

End Time: Set the end time to use during Daylight Saving mode. Default is 02:00 (hh:mm).

Submit Button

Click the **Submit** button to save these settings. You must click **Save and Restart** once you have completed and submitted all the screens on which you have made changes.

IP Setup > Static Routes

Routing information is used by every computer connected to a network to identify whether it is sending a data packet directly to the firewall or passing it on to another network. The options to Delete or Edit a route after it has been defined and added are available by using the table at the bottom of the screen.

Add Static Routes

Static Route: Select a static route from the drop down list box, and then click the Add button.

Add Button: After clicking the **Add** button, the new route is added and will display at the bottom of the screen.

Important Note:

The Static Route screen will not display until the network is defined under **Networks & Services**.

IP Setup > Remote Configuration

IP Setup -> Remote Configuration

Remote Configuration

Add Network/Host for remote configuration

ADD

Network/Host	Options
LAN	Static

Remote Configuration

Add Network/Host for Remote Configuration:

Select a network or host from the drop down box. The choices are Any, LAN, and WAN Interface. Choose all that apply. Click the **Add** button after each selection.

Add Button: After clicking the **Add** button, the network or host is added and displays at the bottom of the screen.

Delete: You will have the option to delete **Any** and **WAN Interface**.

PPP

PPP > PPP Configuration

PPP

PPP Configuration

Wakeup on call

PPP -> PPP Configuration

PPP General

PPP Enable Disable

Dial-on-Demand Enable Disable

Idle time out (in Sec) **Connect time out** (in Sec)

Dialing Max retries (0: Infinite Retries)

Authentication

Authentication Type pap chap pap-chap

Username **Password**

ICMP Keep Alive check

Keep Alive check Enable Disable

HostName **Interval** (in Secs)

Count

Modem Configuration

Baud Rate bps **Dial number**

Dial Prefix **Connect String**

Init String 1: **Init String 2:**

Init String 3: **Init String 4:**

Init String 5:

PPP General

PPP

Enable/disable PPP. Default is Enable.

Dial-on-Demand:

Enable/disable Dial-on-Demand. Default is Enable. If you disable it, the modem will always stay connected.

Idle Time Out:

Set the amount of idle time that will pass before the modem will timeout. Default is 180 seconds.

Connect Time Out:

Set the amount of seconds to wait for a connection while in receive mode before timing out.

Dialing Max Retries:

Enter the number of dialing retries allowed. Default is zero, which means an infinite number is allowed. Range 0 to 100.

Authentication

Authentication Type:

Set the authentication protocol type that will negotiate with the remote peer: pap/chap/pap-chap. Default is pap-chap.

User Name:

Enter the User Name with which the remote peer will authenticate. Default is ipmodule.

Password:

Enter the Password with which the remote peer will authenticate. Default is ipmodule.

ICMP Keep Alive Check

Keep Alive Check: Enable/disable the Keep Alive Check. Default is disable.
Host Name: Enter the Host Name.
Interval: Default is 30 seconds.
Count: Default is 10.

Modem Configuration (Refer to the Customer Activation Notices included with the product for proper information to enter).

Baud Rate: Set the serial baud rate. Default is 115200.
Dial Number: Set the dial number to be dialed. Default is NULL.
 For EDGE or GPRS the number is *99***1#.
 For CDMA the number is #777.
Dial Prefix: Set the modem dial prefix. Default is ATDT.
Connect String: Set the modem connect string. Default is CONNECT.
Init String: Configure the modem init strings. Init-num can range from 1-5.

Submit Button

Click the **Submit** button to save these settings. You must click **Save and Restart** once you have completed and submitted all the screens on which you have made changes.

PPP > Wakeup on Call

The Wakeup on Call feature allows the modem to wake up and initiate a connection when there is an incoming call. If you desired some security with this feature, you can setup the modem to wake up based on Caller ID instead of allowing all incoming to wakeup the modem. This will reduce the cost for a modem to be online and available 24/7.

The screenshot shows the 'PPP -> Wakeup on call' configuration page. On the left is a sidebar with 'PPP Configuration' and 'Wakeup on call'. The main content area has a blue header 'PPP -> Wakeup on call'. Below it is a section titled ''Wakeup on call' Configuration'. This section contains:

- 'Wakeup on Call': Radio buttons for 'Enable' and 'Disable' (selected).
- 'Time Delay': A text input field containing '10'.
- 'Init String 1' through 'Init String 5': Five empty text input fields.
- 'Init String 2' through 'Init String 4': Three empty text input fields.
- A blue 'SUBMIT' button.

 Below this is a section titled 'Caller ID Configuration'. It contains:

- 'Add 'Wakeup on call' Caller ID': A text input field.
- A blue 'ADD' button.
- A table at the bottom with columns: 'Sl No', 'Caller ID', and 'Options'.

“Wakeup on Call” Configuration

Wakeup on Call: Enable/disable Wakeup on Call. Default is disable.
Time Delay: Enter the amount of time that will pass between the ring of an incoming call and the initiated connection.
Init Strings: Configure the modem initialization strings. Init-num can range from 1-5.

Caller ID Configuration

Add “Wakeup on Call” Caller ID: To add Caller ID to the Wakeup-on-Call function, enter the Caller ID to be allowed to wakeup the modem. After entering the Caller ID, click the Add button. The Caller ID displays at the bottom of screen. You can enter any number of IDs you desire. A Caller ID can be edited or deleted using Options, which will be available once a Caller ID is displayed.

Submit Button

Click the **Submit** button to save these settings. You must click **Save and Restart** once you have completed and submitted all the screens on which you have made changes.

Networks & Services

Networks & Services > Network Configuration

Networks or Hosts can be added here. The options to Delete or Edit a network after it has been defined and added are available by using the table at the bottom of the screen.

Name	IP Address	Mask	Options
Any	0.0.0.0	0	Static
LAN	192.168.2.0	24	Static
WANInterface	NotAcquired	32	Static

Network Configuration

Enter the Name, IP Address, and Mask for a new Network or Host.

Notes:

- A Network/Host Name cannot be edited.
- A Network/Host cannot be deleted if it is used in another configuration.
- Network/Host changes are reflected in all the configurations in the Web Management software where they are used.
- A Network/Host added here will be displayed in the following sections: Static Routes, DNAT, and Packet Filters.

Name: Enter the name of the Network/Host. The same address-mask pair should not already be present in the list displayed.

IP Address: Enter the IP Address of the Network/Host. The same address-mask pair should not already be present in the list displayed.

Subnet Mask: Enter the Network Mask of the Network/Host. For Host addresses, the mask is entered as 32.

Add Button: Click the **Add** button. The defined network is added and will display at the bottom of the screen.

Networks & Services > Service Configuration

On this screen you can specify the standard set of well known services available on the system. These services enable the configuration of the user defined services. The options to Delete or Edit a service after it has been defined and added are available by using the table at the bottom of the screen.



[IP Setup](#) | [PPP](#) | [Networks & Services](#) | [Packet Filters](#) | [DHCP Server](#) | [Tools](#) | [Statistics & Logs](#) | [Save & Restart](#) | [Help-Index](#)

[Home](#) | [Wizard Setup](#) | [Logout](#) | [Help](#)

Networks & Services

Network Configuration

Service Configuration

Networks & Services > Service Configuration

Service Configuration

Name	Protocol	S-Port/Client	D-Port/Server
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text" value="tcp"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>

Name	Protocol	S-Port	D-Port	Options
Any	any	1:65535	1:65535	Static
DNS-tcp	tcp	1:65535	53	Static
DNS-udp	udp	1:65535	53	Static
FTP	tcp	1024:65535	20:21	Static
FTP-CONTROL	tcp	1024:65535	21	Static
H323	tcp	1024:65535	1720	Static
HTTP	tcp	1024:65535	80	Static
HTTPS	tcp	1024:65535	443	Static
IDENT	tcp	1024:65535	113	Static
IMAP	tcp	1024:65535	143	Static
netbios-dgm-tcp	tcp	138	138	Static
netbios-dgm-udp	tcp	138	138	Static
netbios-ns-tcp	tcp	137	137	Static
netbios-ns-udp	udp	137	137	Static
netbios-ssn-tcp	tcp	1024:65535	139	Static
netbios-ssn-udp	udp	1024:65535	139	Static
NEWS	tcp	1024:65535	119	Static
POP3	tcp	1024:65535	110	Static
PPTP	tcp	1024:65535	1723	Static
SMTP	tcp	1024:65535	25	Static
SNMP	udp	1024:65535	161	Static
SNTP	tcp	1024:65535	123	Static
SOCKS	tcp	1024:65535	1080	Static
SQUID	tcp	1024:65535	3128	Static
SSH	tcp	1:65535	22	Static
TFTP	udp	1:65535	69	Static
TELNET	tcp	1024:65535	23	Static
TRACEROUTE	udp	1024:65535	33000:34000	Static

Multi-Tech Systems, Inc. MultiModem Wireless Modem with Ethernet Interface (S000375A)

24

Service Configuration

Enter the Name, Protocol, Source Port/Client, and Destination Port/Server for the new Service.

Notes:

- A Service Name cannot be edited.
- A Service cannot be deleted if it is used in another configuration.
- Services changes are reflected in all the configurations in the Web Management software where they are used.
- Services added here will be displayed in the following sections: DNAT, Packet Filters.

Name: Enter the name of the Service. It has to be unique.

Protocol: Enter the type of protocol (TCP, UDP).

Source Port: Enter the Source Port for this service.

Destination Port: Enter the name of the Destination Port for the service.

Add Button: Click the **Add** button. The new service is added and will display on the screen.

Packet Filters

Packet Filters > Packet Filters.

You can Delete or Edit a packet filter rule after it has been defined and added by using the table at the bottom of the screen.

From (Host/Network)	Service	To (Host/Network)	Action	Options
LAN	Any	Any	ACCEPT	Edit Delete

Packet Filter

From (Host/Networks): Enter the network/host from which the packet must originate for the filter rule to match. The *Any* option, which matches all IP addresses regardless of whether they are officially assigned addresses or private addresses, may also be entered. The network/host must be pre-defined in the Networks section.

Service: Enter the service that is to be matched with the filter rule. These services must be pre-defined in the Services section. These services precisely define the traffic to be filtered.

To (Host/Networks): Enter the network/host to which the packet must send for the filter rule to match. The *Any* option, which matches all IP addresses regardless of whether they are officially assigned addresses or private addresses, may also be entered. The network/host must be pre-defined in the Networks section.

Action: Enter the action that the packet filter executes if the rule matches any traffic traversing the firewall. Types of actions defined are:

Accept: Allows/accepts all packets that match this rule.

Reject: Blocks all packets that match this rule. The host sending the packet will be informed that the packet has been rejected.

Drop: Blocks all packets that match this rule, but the host is not informed; i.e., this is a silent drop.

Log: Packets matching the rule; i.e., the corresponding source address, destination address, and service will be logged.

Add Button: Click the **Add** button. The defined packet filter rule is added and will display at the bottom of the screen.

Packet Filters > DNAT Configuration

Destination Network Address Translation (DNAT) is a process that allows the placing of servers within the protected network and making them available for a certain service to the outside world. The DNAT process running of the wireless modem/router translates the destination address of incoming packets to the address of the real network server on the LAN. The packets are then forwarded.

You can Delete or Edit a DNAT rule after it has been defined and added by using the table at the bottom of the screen.

Important Note: When adding rules, at least one host must be defined in the Network Configuration section.

DNAT Configuration

Source:

Enter the original target network or host of the IP packets that are to be re-routed. The network/host must be pre-defined in the Network Configuration section.

Pre-DNAT Service:

Allows the service for the Pre-DNAT destination entry field to be chosen from the drop-down list. The service must have already been defined in the Service Configuration section.

Post DNAT IP:

Enter the IP packets destination to which the packets are to be diverted. Only one host can be defined as the Post DNAT destination.

Post DNAT Service:

Enter the service for the Post DNAT Destination.

Add Button:

Click the **Add** button. The defined DNAT configuration is added and will display at the bottom of the screen.

Packet Filters > Advanced

The screenshot shows the 'Packet Filters -> Advanced' configuration page. The page is divided into two main sections: 'Connection Tracking' and 'ICMP Configuration'. In the 'Connection Tracking' section, there are two rows: 'H323' and 'PPTP'. Each row has two radio buttons: 'enable' and 'disable'. For both H323 and PPTP, the 'disable' radio button is selected. In the 'ICMP Configuration' section, there are three rows: 'ICMP on LAN', 'ICMP on WAN', and 'ICMP Forward'. Each row has two radio buttons: 'enable' and 'disable'. For all three, the 'enable' radio button is selected. At the bottom right of the page, there is a 'SUBMIT' button.

Connection Tracking

H323: Enable/disable the forwarding of H323 packets across the firewall.

PPTP: Enable/disable PPTP Packet Pass-through (PPTP NAT support).

ICMP Configuration

The Internet Control Message Protocol (ICMP) is used to test the network connections and the functionality of the firewall and is also used for diagnostic purposes. *ICMP on Firewall* and *ICMP Forwarding* always apply to all IP addresses; i.e., *Any*. When these are enabled, all IP hosts can Ping the firewall (*ICMP on Firewall*) or the network behind it (*ICMP Forwarding*).

ICMP on LAN: Enable/disable the transfer of ICMP packets on the LAN interface.

ICMP on WAN: Enable/disable the transfer of ICMP packets on the WAN interface.

ICMP Forward: Enable/disable the forwarding of ICMP packets through the firewall into the local network.

Submit Button

Click the **Submit** button to save these settings. You must click **Save and Restart** once you have completed and submitted all the screens on which you have made changes.

DHCP Server

DHCP Server > Subnet Settings

MultiTech Systems

IP Setup | PPP | Networks & Services | Packet Filters | DHCP Server | Tools | Statistics & Logs | Save & Restart | Help-Index
Home | Wizard Setup | Logout | Help

DHCP Server

Subnet Settings
Fixed Addresses

DHCP Server -> Subnet Settings

General Configuration

DHCP Enable Disable

Subnet Mask

Default Gateway DNS

Lease Time(dd-hh-mm) (00-00-00 : infinite lease time)

Subnet Settings

From To

ADD

From	To	Options
192.168.2.100	192.168.2.200	Delete

General Configuration

DHCP (Dynamic Host Configuration Protocol) is a protocol that allows individual devices on an IP network to get their own network configuration information (IP address, subnet mask, broadcast address, etc.) from a DHCP server. The overall purpose of DHCP is to make it easier to administer a large network.

- DHCP:** Enable/disable the DHCP server.
- Subnet:** Enter the subnet address. For the subnet change, all the ranges have to be deleted; otherwise, you would not be able to edit the subnet.
- Mask:** Enter the subnet mask address.
- Gateway:** Enter the gateway address.
- DNS:** Enter the DNS address.
- Lease Time:** Select the DHCP Lease Time from the selection box. Lease time is set in days, hours, and minutes. A Lease Time of 00-00-00 is an Infinite Lease Time.

Subnet Settings

- From-To Range:** Enter the range of IP address for the subnet. For every range, the *From* and the *To* addresses have to be entered in these fields.
- Add:** Click the **Add** button. The address range is added and will display in the table at the bottom of the screen. Once the range displays, you can delete if necessary.

DHCP Server > Fixed Addresses

DHCP Fixed Configuration

The DHCP server can be made to assign a fixed IP address for a particular user by identifying the MAC address. This binding can be made permanent by configuring it here. The same IP address will not be used for any DHCP client with a different MAC address, even if there is no active DHCP connection with that IP address.

MAC Address: Enter the MAC address to which the specified IP address binds.

IP Address: Enter the fixed IP address to be assigned.

Add: Click the **Add** button. The addresses are added and will display in the table at the bottom of the screen from where they can be deleted or changed.

Tools

Tools > Tools

DDNS

DDNS Force Update: Click the **Update** button to give the DDNS force update condition.

DDNS Status: Click the **Refresh** button to display the DDNS Status after a forced update.

Modem

Reset Modem: Click the **Reset** button to reset the wireless modem.

Tools > Service Status

This screen displays the status of each service that is available at run time. The first column lists the services available at run time; the second column identifies the configuration (enabled/disabled); the third column reports the current status of each service.

Service Name	Configuration	Status
DDNS		DDNS is disabled
SNTP	disable	SNTP is disabled
Ping Keep Alive		PING Keep alive is disabled
Dial-on-Demand	enable	PPP Link is up

Tools > Firmware Upgrade

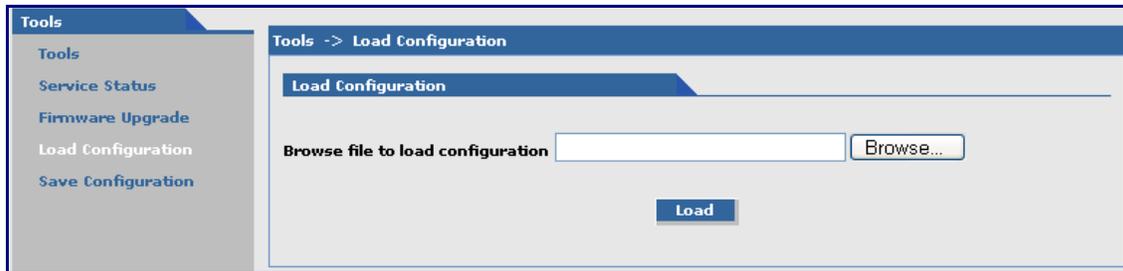
Firmware Upgrade

Browse File for Upgrade: Click the **Browse** button to open the file that allows you to locate the upgrade file. When found, highlight the file name and press Enter so that the file name displays in the text box. Then click the **Upgrade** button.

Important Notes:

- **Firmware Upgrade** is available only when **Firmware Upgrade Configuration** is enabled on the IP Setup screen.
- The new firmware is written into the flash.
- A **Firmware Upgrade** will take at least 150 seconds while the firmware is downloaded. Do not cycle power during this time.

Tools > Load Configuration



Load Configuration

Browse File for Load Configuration: Click the **Browse** button to open the file that allows you to locate the configuration file. When found, highlight the file name and press Enter so that the file name displays in the text box. Then click the **Load** button.

Important Notes:

- The new configuration is written into the flash.
- A **Configuration Upgrade** will take at least 3 seconds to download and 60 seconds to install the settings and reboot. Reboot happens automatically.

Tools > Configuration Download

When you choose **Configuration Download** function, the following screen displays. It shows the name of the file you selected on the **Configuration Upgrade** screen.

Click the **Open**, **Save**, **Cancel**, or **More Info** buttons as desired. The **More Info** button displays Microsoft's Internet Explorer Help on downloading files.



Statistics & Logs

Statistics & Logs > Ethernet

Statistics & Logs	
Ethernet	Statistics & Logs -> Ethernet
Serial	eth0 statistics
PPP	MTU 1500 bytes
PPP Trace	Rx Bytes 259034 bytes
SysInfo	Rx Packets 2040
DHCP Stat	Rx Errors 0
	Rx dropped 0
	Rx Overruns 0
	Rx Frame 0
	Rx Compressed 0
	Tx Bytes 103306 bytes
	Tx Packets 1742
	Tx Bytes 103306 bytes
	Tx Packets 1742
	Tx Errors 2
	Tx dropped 0
	Tx Overruns 0
	Tx Carrier 2
	Tx Collisions 0
	Tx Compressed 0
	Tx Queue Length 1000

This is an example of the Ethernet Statistics & Logs screen. It shows the type of information you will receive when you run this report.

Statistics & Logs > Serial

Statistics & Logs	
Ethernet	Statistics & Logs -> Serial
Serial	Serial Statistics (Current Session)
PPP	Status Active
PPP Trace	Rx Bytes 445 Bytes
SysInfo	Rx Errors 0
DHCP Stat	Tx Bytes 543 Bytes
	Tx Errors 0
	Tx Errors 0
	DCD On

This is an example of the Serial Statistics & Logs screen. It shows the type of information you will receive when you run this report.

Statistics & Logs > PPP

Statistics & Logs	
Ethernet	
Serial	
PPP	
PPP Trace	
SysInfo	
DHCP Stat	

Statistics & Logs -> PPP	
ppp0 statistics	
PPP Link	UP (dialed)
PPP Local ip	208.54.128.253
PPP Remote ip	192.168.111.111
MTU	1500 bytes
Rx Bytes	260535 bytes
Rx Packets	313
Rx Errors	0
Rx dropped	0
Rx Overruns	0
Rx Frame	0
Rx Compressed	0
Tx Bytes	37738 bytes
Tx Packets	344
Tx Errors	0
Tx dropped	6
Tx Overruns	0
Tx Carrier	0
Tx Collisions	0
Tx Compressed	0
Tx Queue Length	3

This is an example of the PPP Statistics & Logs screen. It shows the type of information you will receive when you run this report.

Statistics & Logs > PPP Trace

The screenshot shows the 'Statistics & Logs' interface with a sidebar on the left containing the following menu items: Ethernet, Serial, ppp, PPP Trace, SysInfo, and DHCP Stat. The main content area is titled 'Statistics & Logs -> PPP Trace' and 'PPP Trace'. The log entries are as follows:

```

Physical Link Establishment
Sent: AT^M
Rcvd: AT^M^M
Rcvd: OK
Sent: at+cgdcont=1,"IP","internet3.voicestream.com"^M
Rcvd: ^M
Rcvd: at+cgdcont=1,"IP","internet3.voicestream.com"^M^M
Rcvd: OK
Sent: ATDT*99***1#^M
Rcvd: ^M
Rcvd: ATDT*99***1#^M^M
Rcvd: CONNECT
Sent: ^M
Physical link established
LCP: Sent Configure Ack
LCP: Rcvd Configure Reject
LCP: Rcvd Configure Ack
LCP: LAYER IS UP
PAP: Authentication Success
IPCP: Sent Configure ACK
IPCP: Rcvd Configure Nak
IPCP: Rcvd Configure Ack
IPCP: LAYER IS UP
PPP Established
  
```

This is an example of the PPP Trace Statistics & Logs screen. It shows the type of information you will receive when you run this report.

Statistics & Logs > SysInfo

Statistics & Logs -> SysInfo

Processor : ARM/CNXT Arm940sid(wb) rev 2 (v4l)

BogoMIPS : 83.55
 Hardware : CNXT CX821XX
 Revision : 0000
 Serial : 0000000000000000
 System Uptime:
 12:35am up 35 min, load average: 0.00, 0.00, 0.00

Memory utilization:
 total: used: free: shared: buffers: cached:
 Mem: 6516736 5607424 909312 0 970752 1605632
 Swap: 0 0 0

Model No : MTXCSEM
 Version No : 1.00
 Mac address : 00:08:00:50:aa:aa
 Flash Size : 2048 Kbytes
 SDRAM Size : 8192 Kbytes
 Processor Speed : 144 Mhz
 UART Speed : 115200

This is an example of the System Information Statistics & Logs screen. It shows the type of information you will receive when you run this report.

Statistics & Logs > DHCP Stat

Statistics & Logs -> DHCP Stat

DHCP Statistics

Mac Address	IP Address
-------------	------------

This is an example of the DHCP Statistics & Logs screen. It shows the type of information you will receive when you run this report.

Chapter 4 – Wireless Antenna

The Antenna

The antenna sub-system and integration in the application is a major issue: Choice of antenna (type, length, performances, thermal resistance, etc.) These elements could affect GSM performances such as sensitivity and emitted power.

GSM and CDMA Antenna

The integrated modem antenna connector is a SMA connector. The SMA connector incorporates a 'Screw-on' action in order to make the connection easier while providing an excellent RF performance. An additional advantage is its small physical size, which is 50% of the standard MCX connector.

This type of connector is suitable for the standard ranges of flexible and semi-rigid cables. The characteristic impedance of the MMCX coaxial connector is 50 ohm. The antenna manufacturer must guarantee that the antenna will be working according to the radio characteristics presented in the table below.

GSM Radio Characteristics

	GSM 850	E-GSM 900	GSM 1800	GSM 1900
Frequency RX	869 to 894 MHz	925 to 960 MHz	1805 to 1880 MHz	1930 to 1990 MHz
Frequency TX	824 to 849 MHz	880 to 915 MHz	1710 to 1785 MHz	1850 to 1910 MHz
RF Power Stand	2W at 12.5% duty cycle	2W at 12.5% duty cycle	1W at 12.5% duty cycle	1W at 12.5% duty cycle
Impedance	50 ohms			
VSWR	<2			
Typical Radiated Gain	0 dBi on azimuth plane			

CDMA Radio Characteristics

	CDMA 800	CDMA 1900
Frequency RX	869 to 894 MHz	1930 to 1990 MHz
Frequency TX	824 to 849 MHz	1850 to 1910 MHz
Impedance	50 ohms	
VSWR	<2	
Typical Radiated Gain	0 dBi in at least one direction	

Antenna

An antenna that meets the requirements for use with the SocketWireless product is included with your purchase.



Appendix A – Firmware Upgrade Using External TFTP Client

Follow the steps below to install new firmware from the Multi-Tech Systems, Inc. Web site:

Obtaining the Latest Firmware Version

To obtain the latest version of the firmware, contact your Multi-Tech Sales Representative or contact Multi-Tech directly by phone or email:

Phone: 763-785-3500 or 800-328-9717

See the Multi-Tech Web site: www.multitech.com

1. Open the modem/router's Web Management software using a Web Browser. Enter the Gateway Address <http://192.168.2.1> (default) and complete the login.
2. Go to the **IP Setup > General Configuration** screen and check the **Enable** button for **Firmware Upgrade** under the **TFTP Configuration** at the bottom of the screen.
3. Click **Save & Restart** located on the Menu bar.
4. Then open the DOS screen by clicking the PC's **Start** button and selecting **Programs > Accessories > Command Prompt**.
5. At the **C:** prompt, enter the upload request by typing the following:
tftp -i <ip-address> put <firmware-filename>-tftp.bin AMD-tftp.bin
Then press **Enter**.
Example: `tftp -i 192.168.2.1 put c:\example.bin AMD-tftp.bin` (Press Enter)
Definitions of the Upload Request Parameters:
 - **<ip-address>**
Address of the Serial-to-Ethernet Adapter to which you are uploading the firmware image.
 - **<firmware filename>**
Filename under which the firmware file was saved on your PC or local network.
 - **AMD-tftp.bin <destination filename>**
Filename must be AMD-tftp.bin. This is a case-sensitive file name; type it as shown here.
6. After the upgrade is completed, open the Web Management software to see if the new version shows.

Appendix B – Multi-Tech Systems, Inc. Warranty and Repair Policies

Multi-Tech Warranty Statement

Multi-Tech Systems, Inc., (hereafter “MTS”) warrants that its products will be free from defects in material or workmanship for a period of two, five, or ten years (depending on model) from date of purchase, or if proof of purchase is not provided, two, five, or ten years (depending on model) from date of shipment.

MTS MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED.

This warranty does not apply to any products which have been damaged by lightning storms, water, or power surges or which have been neglected, altered, abused, used for a purpose other than the one for which they were manufactured, repaired by Customer or any party without MTS’s written authorization, or used in any manner inconsistent with MTS’s instructions.

MTS’s entire obligation under this warranty shall be limited (at MTS’s option) to repair or replacement of any products which prove to be defective within the warranty period or, at MTS’s option, issuance of a refund of the purchase price. Defective products must be returned by Customer to MTS’s factory — transportation prepaid.

MTS WILL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES, AND UNDER NO CIRCUMSTANCES WILL ITS LIABILITY EXCEED THE PRICE FOR DEFECTIVE PRODUCTS.

Repair Procedures for U.S. and Canadian Customers

In the event that service is required, products may be shipped, freight prepaid, to our Mounds View, Minnesota factory:

Multi-Tech Systems, Inc.
2205 Woodale Drive
Mounds View, MN 55112
Attn: Repairs, Serial # _____

A Returned Materials Authorization (RMA) is not required. Return shipping charges (surface) will be paid by MTS to destinations in U.S. and Canada.

Please include, inside the shipping box, a description of the problem, a return shipping address (must have street address, not P.O. Box), your telephone number, and if the product is out of warranty, a check or purchase order for repair charges.

For out of warranty repair charges, go to www.multitech.com/DOCUMENTS/Company/warranty/

Extended two-year overnight replacement service agreements are available for selected products. Please call MTS customer service at (888) 288-5470 or visit our web site at www.multitech.com/PARTNERS/Programs/orc/ for details on rates and coverage’s.

Please direct your questions regarding technical matters, product configuration, verification that the product is defective, etc., to our Technical Support department at (800) 972-2439 or email support@multitech.com. Please direct your questions regarding repair expediting, receiving, shipping, billing, etc., to our Repair Accounting department at (800) 328-9717 or (763) 717-5631, or email mtsrepair@multitech.com.

Repairs for damages caused by lightning storms, water, power surges, incorrect installation, physical abuse, or user-caused damages are billed on a time-plus-materials basis.

Repair Procedures for International Customers (Outside U.S.A. and Canada)

Your original point of purchase Reseller may offer the quickest and most economical repair option for your Multi-Tech product. You may also contact any Multi-Tech sales office for information about the nearest distributor or other repair service for your Multi-Tech product. The Multi-Tech sales office directory is available at www.multitech.com/PARTNERS/Channels/offices/

In the event that factory service is required, products may be shipped, freight prepaid to our Mounds View, Minnesota factory. Recommended international shipment methods are via Federal Express, UPS or DHL courier services, or by airmail parcel post; shipments made by any other method will be refused. A Returned Materials Authorization (RMA) is required for products shipped from outside the U.S.A. and Canada. Please contact us for return authorization and shipping instructions on any International shipments to the U.S.A. Please include, inside the shipping box, a description of the problem, a return shipping address (must have street address, not P.O. Box), your telephone number, and if the product is out of warranty, a check drawn on a U.S. bank or your company's purchase order for repair charges. Repaired units shall be shipped freight collect, unless other arrangements are made in advance.

Please direct your questions regarding technical matters, product configuration, verification that the product is defective, etc., to our Technical Support department nearest you or email support@multitech.com. When calling the U.S., please direct your questions regarding repair expediting, receiving, shipping, billing, etc., to our Repair Accounting department at +(763) 717-5631 in the U.S.A., or email mtsrepair@multitech.com.

Repairs for damages caused by lightning storms, water, power surges, incorrect installation, physical abuse, or user-caused damages are billed on a time-plus-materials basis.

Repair Procedures for International Distributors

International distributors should contact their MTS International sales representative for information about the repairs for their Multi-Tech product.

Please direct your questions regarding technical matters, product configuration, verification that the product is defective, etc., to our International Technical Support department at +(763)717-5863. When calling the U.S., please direct your questions regarding repair expediting, receiving, shipping, billing, etc., to our Repair Accounting department at +(763) 717-5631 in the U.S.A. or email mtsrepair@multitech.com.

Repairs for damages caused by lightning storms, water, power surges, incorrect installation, physical abuse, or user-caused damages are billed on a time-plus-materials basis.

Replacement Parts

SupplyNet, Inc. can supply you with replacement power supplies, cables, and connectors for selected Multi-Tech products. You can place an order with SupplyNet via mail, phone, fax, or the Internet at the following addresses:

Mail: SupplyNet, Inc.
614 Corporate Way
Valley Cottage, NY 10989
Phone: 800 826-0279
Fax: 914 267-2420
Email: info@thesupplynet.com
Internet: <http://www.thesupplynet.com>

Appendix C – Waste Electrical and Electronic Equipment

July, 2005

Waste Electrical and Electronic Equipment (WEEE)

The WEEE directive places an obligation on EU-based manufacturers, distributors, retailers and importers to take-back electronics products at the end of their useful life. A sister Directive, ROHS (Restriction of Hazardous Substances) complements the WEEE Directive by banning the presence of specific hazardous substances in the products at the design phase. The WEEE Directive covers all Multi-Tech products imported into the EU as of August 13, 2005. EU-based manufacturers, distributors, retailers and importers are obliged to finance the costs of recovery from municipal collection points, reuse, and recycling of specified percentages per the WEEE requirements.

Instructions for Disposal of WEEE by Users in the European Union

The symbol shown below is on the product or on its packaging, which indicates that this product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.



Index

A	
always-on network connection	5
Application Example.....	6
Auto Dialout configuration	16
Autodiscovery configuration	16
B	
Broadcast timer	16
Browse File for Load Configuration	31
Browse File for Upgrade	30
C	
Caller ID for Wakeup on Call.....	22
CDMA technology	5
Check IP Server	17
Configuration Download.....	31
Configuration Upgrade	31
Configure Ethernet functionality	9
D	
Date and time.....	12
Daylight Savings Time configuration	18
DDNS authentication.....	17
DDNS Client.....	17
DDNS configuration	17
DDNS force update	29
DDNS Status.....	29
DHCP configuration	28
DHCP fixed addresses	29
DHCP server	28
DHCP subnet setting.....	28
dial-on-demand	5
Dial-on-Demand.....	21
DNAT configuration.....	26
E	
EDGE technology.....	5
Ethernet LEDs.....	12
Ethernet ports caution	6
F	
Firmware Upgrade	30
Front panels	12
G	
General Configuration	15
GPRS technology.....	5
GSM/GPRS and CDMA Antenna	36
H	
H323 packets	27
Handling Precautions	6
HTTP authentication	16
HTTP configuration	16
I	
ICMP configuration.....	27
ICMP Keep Alive Check.....	22
Idle time out	21
IP Configuration	16
IP Server	17
ITCP	25
L	
LEDs	12
M	
Menu structure	11
Modem authentication.....	22
Modem LEDs	12
N	
Navigating	11
Network configuration	23
Network/Host for Remote Configuration.....	20
O	
Obtain DNS Server Address Automatically	8
Obtain IP Address automatically	8
Ordering Replacement Parts.....	39
P	
Packet Filter	25
Packet filter rules.....	25
Polling time	18
Power and Ethernet connections	8
PPP authentication.....	21
PPP configuration	21
PPTP packet passthrough	27
protocol	25
R	
Radio Characteristics	36
Raw Dialout configuration	16
Remote Configuration	20
Repair	38
Replacement Parts.....	39
Reset button.....	8
Reset for 5 seconds	8
Reset Modem Tools	29
Route configuration.....	19
S	
Safe password	16
Safety Warnings.....	6
Save & Restart.....	10
Screen buttons	11
Server Port.....	16
Service Configuration.....	24
Service Status in Tools	30
Setup Wizard.....	9, 10
Ship Kit Contents	6
Shutdown caution.....	12
SNTP configuration	18
Specifications	7
Static Routes configuration	19
Statistics & Logs > DHCP Statistics	35

Statistics & Logs > Ethernet	32	Time zone configuration	18
Statistics & Logs > PPP	33	Tools	29
Statistics & Logs > PPP Trace	34	U	
Statistics & Logs > Serial	32	UDP	25
Statistics & Logs > SysInfo.....	35	W	
Sub-menus.....	11	Wakeup on Call.....	22
Syslog configuration.....	16	Warranty	38
System domain name	17	Web Management software	9
T		Wireless activation	8
TCP/IP address.....	8	Wireless Service Provider	8
Test your workstation	12		
TFTP configuration.....	16		