

TWG850/DWG855

digital | **BROADBAND**

RESIDENTIAL VOICE GATEWAY

**THOMSON**

# Important Information

## CAUTION

Disconnect power before servicing.

This device is intended for indoor operation only. Telephone jacks Line 1 and Line 2 must not be connected to outside wiring.

## CAUTION

To ensure reliable operation and to prevent overheating, provide adequate ventilation for this modem and keep it away from heat sources. Do not locate near heat registers or other heat-producing equipment. Provide for free air flow around the Residential Voice Gateway and its power supply.



## **NORTH AMERICAN CABLE INSTALLER:**

This reminder is provided to call your attention to Article 820–40 of the National Electrical Code (Section 54 of the Canadian Electrical Code, Part 1) which provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building as close to the point of cable entry as practical.

## **Euro–PacketCable, Euro–DOCSIS, and DOCSIS compliant (TWG850)**

This product was designed according to Euro–PacketCable Specification, Euro–DOCSIS Specifications and Data over Cable Service Interface Specifications.

## **CableHome, PacketCable, and DOCSIS compliant (DWG855)**

This product was designed according to CableHome Specifications, PacketCable Voice over IP Cable Telephony Specifications and Data over Cable Service Interface Specifications.

It will operate on any DOCSIS–compliant Hybrid Fiber Coax (HFC) cable system and offers DOCSIS and PacketCable Baseline Privacy to promote secure internet transactions and PC–secure telephone service.

## **Operating Information**

Operating Temperature: 0° – 40° C (32° – 104° F)

Storage Temperature: –30° to 65° C

If you purchased this product at a retail outlet, please read the following:

## Product Information

Keep your sales receipt to obtain warranty parts and service and for proof of purchase. Attach it here and record the serial and model numbers in case you need them. The numbers are located on the back of the product.

Model No. \_\_\_\_\_ Serial No \_\_\_\_\_

Purchase Date: \_\_\_\_\_ Dealer/Address/Phone: \_\_\_\_\_

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# Chapter 1: Connections and Setup

## Introduction

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### Residential Voice Gateway Features

- Support Multiple Provisioning Mode
- Standard RJ-45 connector for 10/100BaseT Ethernet with auto-negotiation and MDIS functions
- USB Connector for USB interface
- Two RJ-11 Foreign Exchange Station (FXS) ports for IP telephony
- Support simultaneous voice and data communications
- Two simultaneous voice conversations in the different FXS ports with different CODEC: PCM A-law, PCM-law, G.723.1, G.729, G.729a, G.729e, G.728, G.726, BV16 and BV32
- Echo Cancellation
- Voice Active Detection (VAD)
- DTMF detection and generation
- Comfort Noise Generation (CNG)
- Support V.90 fax and modem services
- Transparent bridging for IP traffic
- RSA and 56 bit DES data encryption security
- SNMP network management support
- Remote operating firmware downloading
- Support Web pages and private DHCP server for status monitoring
- Clear LED display
- Plug and Play

### What's on the CD-ROM

Insert the Residential Voice Gateway CD-ROM into your CD-ROM drive to view troubleshooting tips, the internal diagnostics, and other valuable information.

*Note: You might need to use the CD-ROM to install the USB driver if you are connecting via the USB port.*

# Chapter 1: Connections and Setup

## CD-ROM Contents:

- Electronic copy of this user's guide in additional languages (PDF format)
- Adobe Acrobat Reader — application you can load to read PDF format, if you don't have it loaded already
- USB drivers — required if connecting by USB
- Links to Thomson and RCA web sites

*DOCSIS and PacketCable are trademarks of Cable Television Laboratories, Inc.*

# Chapter 1: Connections and Setup

## Computer Requirements

For the best possible performance from your Residential Voice Gateway, your personal computer must meet the following minimum system requirements (note that the minimum requirements may vary by cable companies):

	<b>IBM PC COMPATIBLE</b>	<b>MACINTOSH**</b>
CPU	Pentium preferred	PowerPC or higher
System RAM	16MB (32MB preferred)	24MB (32MB preferred)
Operating System	Windows* NT/2000/Me/XP, Linux	Mac OS** 7.6.1 or higher
Available Disk Space	125MB	50MB
Sound Card	Required for audio on CD-ROM	N/A
Video	VGA or better (SVGA preferred)	VGA or better (SVGA built-in preferred)
CD-ROM Drive	Required	Required
Ethernet	10BaseT or 100BaseT  An Ethernet card makes it possible for your computer to pass data to and from the internet. You must have an Ethernet card and software drivers installed in your computer. You will also need a standard Ethernet cable to connect the Ethernet card to your Residential Voice Gateway.	10BaseT or 100BaseT
USB Port	USB (Windows 2000/ME/XP only)  The Universal Serial Bus is a high speed bus that enables your computer to communicate simultaneously with a variety of peripherals. However, if you have other peripherals that send and receive a lot of information, such as speakers, printers or scanners, we recommend using an Ethernet card to support this modem.	

# Chapter 1: Connections and Setup

Software	<ul style="list-style-type: none"><li>• A TCP/IP network protocol for each machine</li><li>• Microsoft Internet Explorer 4.0 or later or Netscape Navigator 4.0 or later. (5.0 and 4.7 or later, respectively, are strongly recommended.)</li></ul>
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\*Windows is a trademark of Microsoft Corporation.

\*\*Macintosh and the Mac OS are trademarks of Apple Computer, Inc.

## Wall Mounting

The number of the screw: 2 pcs

Direction for wall mounting: LED panel upward.

Dimension for the screw: TBD

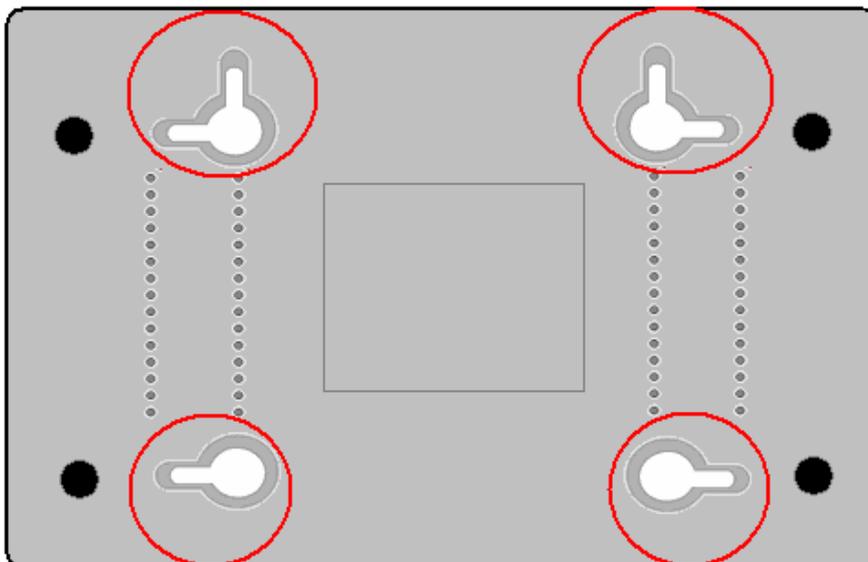
There are 4 slots on the underside of the EMTA that can be used for wall mounting.

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Note: When wall mounting the unit, ensure that it is within reach of the power outlet.

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You will need 2 suitable screws which screw diameter would be 4.4 mm to wall mount the Cable Modem or the Battery Pack. Two different wall mount directions could be chosen for the Battery Pack.



To do this:

1. Ensure that the wall you use is smooth, flat, dry and sturdy and use the 4 screw holes which are 101.6 mm apart from each other.
2. Fix the screws into wall, leaving their heads 3 mm (0.12 inch) clear of the wall surface.

# Chapter 1: Connections and Setup

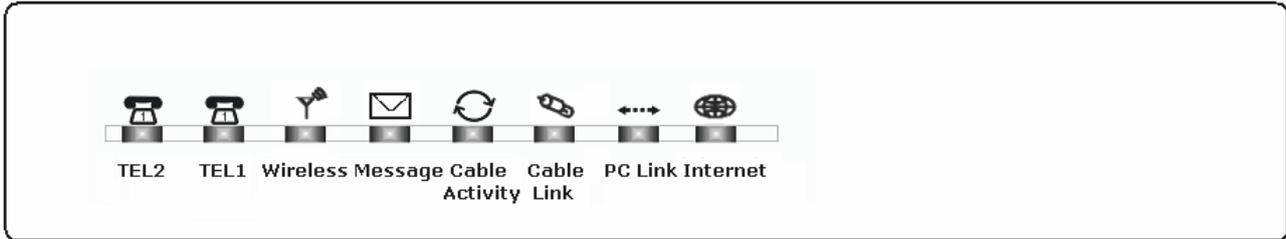
3. Remove any connections to the unit and locate it over the screw heads. When in line, gently push the unit on to the wall and move it downwards to secure.

# Chapter 1: Connections and Setup

## Residential Voice Gateway TWG850 Overview

### Front Panel

The following illustration shows the front panel of the TWG850 machine:



The LEDs on the front panel are described in the table below (from left to right):

	Tel 2	Tel 1	Wireless	Message	Cable Activity	Cable Link	PC Link	Internet	Description
Boot-up Operation	ON	ON	ON	ON	ON	ON	ON	ON	Power on 0.25 sec
	ON	0.25 sec		0.25 second					
	ON	FLASH	X	FLASH	FLASH	X	X	X	From power ON to system initialization complete
	ON	ON	X	ON	ON	X	X	X	Following system initialization complete to (before) DS scanning
Start-up Operation	X	X	X	OFF	OFF	OFF	OFF	FLASH	Tuning (Searching downstream signal)
	X	X	X	OFF	OFF	OFF	FLASH	FLASH	Ranging – Awaiting Response (DS carrier acquire, ranging in process but RNG-RSP has not been detected)
	X	X	X	OFF	OFF	OFF	FLASH	FLASH	Any RNG-RSP detected (Normalizing power level and timing offset)
	X	X	X	OFF	OFF	FLASH	FLASH	FLASH	Connecting (Ranging complete, DHCP in progress)
	X	X	X	OFF	FLASH	FLASH	FLASH	FLASH	Configuring (DHCP complete, configuration file download in process)
	X	X	X	FLASH	FLASH	FLASH	FLASH	FLASH	Registering and Baseline Privacy Initializing (configuration file download complete, initialize BPI if BPI is ON, registration in process)
	X	X	Enter Normal Operation Mode						
Normal Operation	X	X	X	X	X	X	X	FLASH ON	NO Cable Link CM is registered
	X	X	X	X	X	X	OFF FLASH ON	X	NO Ethernet/USB carrier present Ethernet/USB TX/RX traffic Ethernet/USB carrier present, no traffic
	X	X	X	X	X	OFF FLASH ON	X	X	NO Cable Link Cable BSS/OSS has set the CM into de-activated state CM is registered
	X	X	X	X	OFF FLASH	X	X	X	Internet ON-OFF switch off/No RF DS/US network traffic RF DS/US network traffic
	X	X	X	OFF FLASH	X	X	X	X	No message is delivered by the MSO Email is available fro the user on the server (Implementation of the message waiting LED will be via Proprietary MIB)
	X	X	OFF ON FLASH	X	X	X	X	X	Wireless initiate fail or disable Wireless initiate success or enable TX/RX Wireless Traffic
No service Operation	X	X	X	X	X	Wink	X	X	NACO =OFF
	X	X	X	3 seconds ON followed by a flash			OFF		BPI unauthorized (when BPI is ON)

# Chapter 1: Connections and Setup

	Tel 2	Tel 1	Wireless	Message	Cable Activity	Cable Link	PC Link	Internet	Description
MTA initialization	OFF	FLASH	<CM Normal Operation>						MTA DHCP
	FLASH	OFF							MTA SNMP/TFTP
	FLASH	FLASH							RSIP
MTA Operation	ON	ON							Both Lines On-hook
	ON	FLASH							Tel1 Off-hook, Tel2 On-hook
	FLASH	ON							Tel1 On-hook, Tel2 Off-hook
SW Download Operation	FLASH	FLASH	Both Lines Off-hook						
	X	X	X	FLASH	FLASH	FLASH	FLASH	FLASH	A software download and while updating the FLASH memory
	X	X	X	From Right to Left					

## Rear Panel



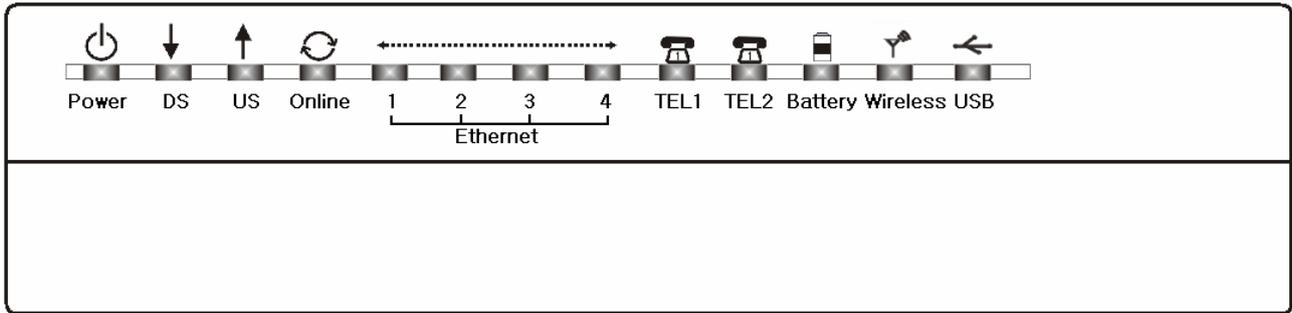
- 15VDC: 15V DC-IN Power connector
- TEL1 & TEL2: Telephony RJ-11 connector
- ETHERNET: Ethernet 10/100BaseT RJ-45 connector
- USB: USB Connector
- REBOOT EMTA: Reboot this Residential Voice Gateway
- CABLE: F-Connector

# Chapter 1: Connections and Setup

## Residential Voice Gateway DWG855 Overview

### Front Panel

The following illustration shows the front panel of the DWG855 machine:



The LEDs on the front panel are described in the table below (from left to right):

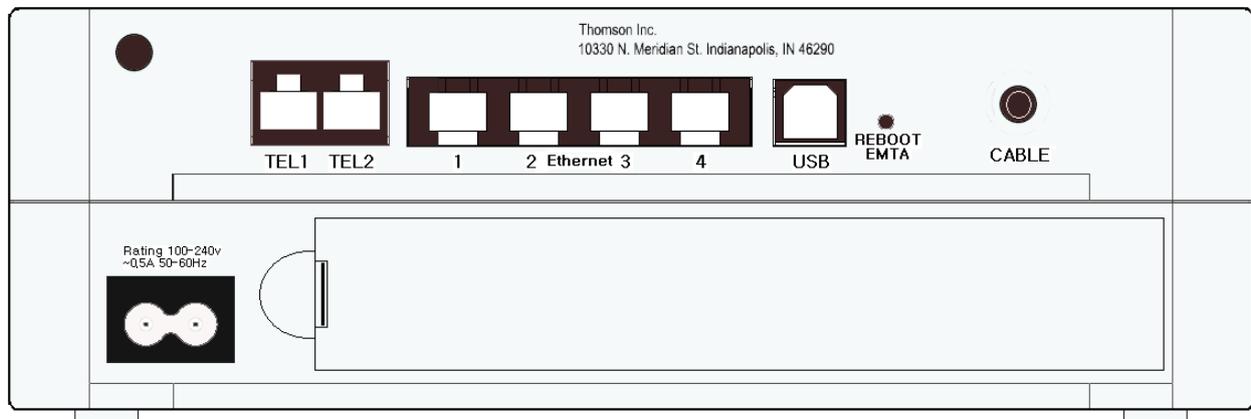
	Power	Internet			Ethernet				Tel 1	Tel 2	Battery	Wireless	USB	Description
		DS	US	Online	1	2	3	4						
Boot-up Operation	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	X	ON	ON	Power on 0.25 sec
	ON	0.25 second			ON	ON	ON	ON	ON	ON	X	ON	ON	From power ON to system initialization complete
	ON	FLASH	FLASH	FLASH	X	X	X	X	X	X	X	X	X	Following system initialization complete to (before) DS scanning
	ON	ON	ON	ON	X	X	X	X	X	X	X	X	X	Following system initialization complete to (before) DS scanning
DOCSIS Start-up Operation	ON	FLASH	OFF	OFF	X	X	X	X	X	X	X	X	X	During DS scanning and acquiring SYNC
	ON	ON	FLASH	OFF	X	X	X	X	X	X	X	X	X	From SYNC completed, receiving UCD to ranging completed
	ON	ON	ON	FLASH	X	X	X	X	X	X	X	X	X	During DHCP, configuration file download, registration, and Baseline Privacy initialization
	ON	ON	ON	ON	X	X	X	X	X	X	X	X	X	Operational (NACO=ON)
	ON	FLASH	FLASH	OFF	X	X	X	X	X	X	X	X	X	Operational(NACO=OFF)
MTA initialization	ON	ON	ON	ON	X	X	X	X	FLASH	OFF	OFF	X	X	MTA DHCP
	ON	ON	ON	ON	X	X	X	X	OFF	FLASH	OFF	X	X	MTA SNMP/TFTP
	ON	ON	ON	ON	X	X	X	X	FLASH	FLASH	OFF	X	X	RSIP
CPE Operation	ON	X	X	X	OFF ON FLASH ON	OFF ON FLASH ON	OFF ON FLASH ON	OFF ON FLASH ON	X	X	X	X	X	No Ethernet Link Ethernet Link TX/RX Ethernet Traffic Ethernet Collision
	ON	X	X	X	X	X	X	X	X	X	X	X	OFF ON FLASH ON	No USB Link USB Link TX/RX USB Traffic USB driver is not ready

# Chapter 1: Connections and Setup

	Power	Internet			Ethernet				Tel1	Tel2	Battery	Wireless	USB	Description	
		DS	US	Online	1	2	3	4							
CPE Operation	ON	X	X	X	X	X	X	X	X	X	X	OFF ON FLASH ON	X	No Wireless Link Wireless Link TX/RX Wireless Traffic Wireless is not installed or disable	
AC Good Battery Good	ON	<CM Normal Operation>							ON	ON	ON	<CM Normal Operation>		Both Lines On-Hook	
	ON								FLASH	ON				Tel1 Off-hook, Tel2 On-hook	
	ON								ON	FLASH				Tel1 On-hook, Tel2 Off-hook	
	ON								FLASH	FLASH				Both Lines Off-Hook	
AC Good Battery Low	ON								ON	ON	ON			FLASH	Both Lines On-Hook
	ON									FLASH	ON				Tel1 Off-hook, Tel2 On-hook
	ON									ON	FLASH				Tel1 On-hook, Tel2 Off-hook
	ON									FLASH	FLASH				Both Lines Off-Hook
AC Good Battery Bad	ON								ON	ON	ON			OFF	Both Lines On-Hook
	ON									FLASH	ON				Tel1 Off-hook, Tel2 On-hook
	ON									ON	FLASH				Tel1 On-hook, Tel2 Off-hook
	ON									FLASH	FLASH				Both Lines Off-Hook
AC Fail Battery Good	FLASH	OFF	ON	OFF	OFF	Both Lines On-Hook									
			FLASH			Tel1 Off-hook, Tel2 On-hook									
			ON			Tel1 On-hook, Tel2 Off-hook									
			FLASH			Both Lines Off-Hook									
AC Fail Battery Low			ON			OFF	ON	FLASH	Both Lines On-Hook						
			FLASH				Tel1 Off-hook, Tel2 On-hook								
			ON				Tel1 On-hook, Tel2 Off-hook								
			FLASH				Both Lines Off-Hook								
AC Fail Battery Bad	< All LEDs may be unlit due to lack of battery power >							OFF	OFF	< All LEDs may be unlit due to lack of battery power >	Both Lines On-Hook				
											Tel1 Off-hook, Tel2 On-hook				
											Tel1 On-hook, Tel2 Off-hook				
											Both Lines Off-Hook				
SW Download Operation	ON	FLASH	FLASH	ON	X	X	X	X	X	X	X	X	A software download and while updating the FLASH memory		

# Chapter 1: Connections and Setup

## Rear Panel

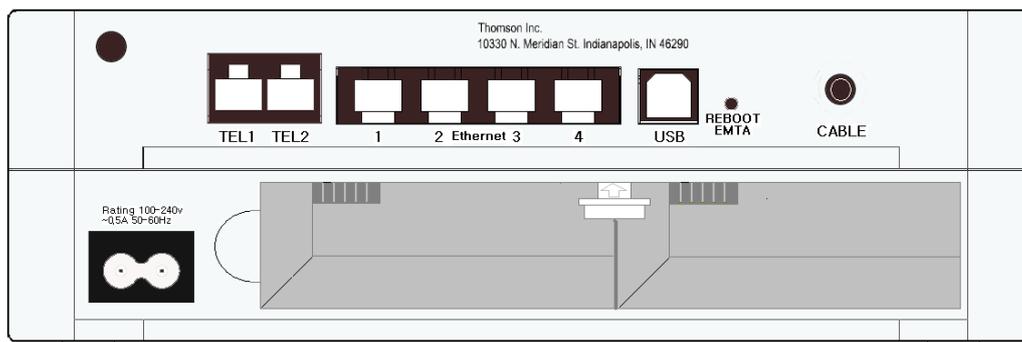


TEL1 & TEL2	Telephony RJ-11 connector
ETHERNET 1-4:	Ethernet 10/100BaseT RJ-45 connector
USB:	USB Connector
REBOOT EMTA:	Reboot this Residential Voice Gateway
CABLE:	F-Connector
Rating 100-240V:	Power connector

## Installing the Battery

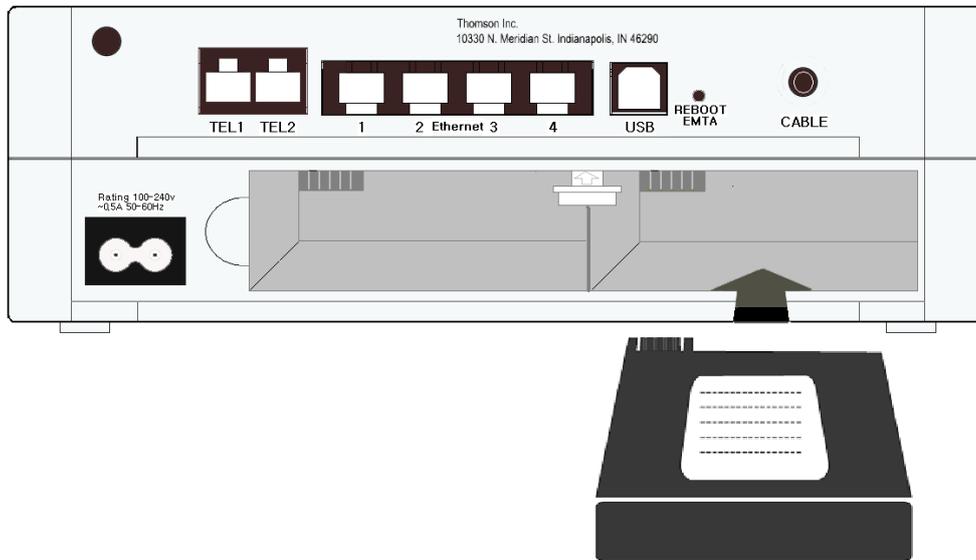
This section provides you information of installing batteries into the modem. Follow the steps below:

1. Unplug the power cord of the power adapter from the modem if you have plugged it.
2. Remove the cover of the rear panel. There are two spare drives for you to install the battery.



# Chapter 1: Connections and Setup

3. Insert the battery into the rear battery drive with the direction that the following picture shows.



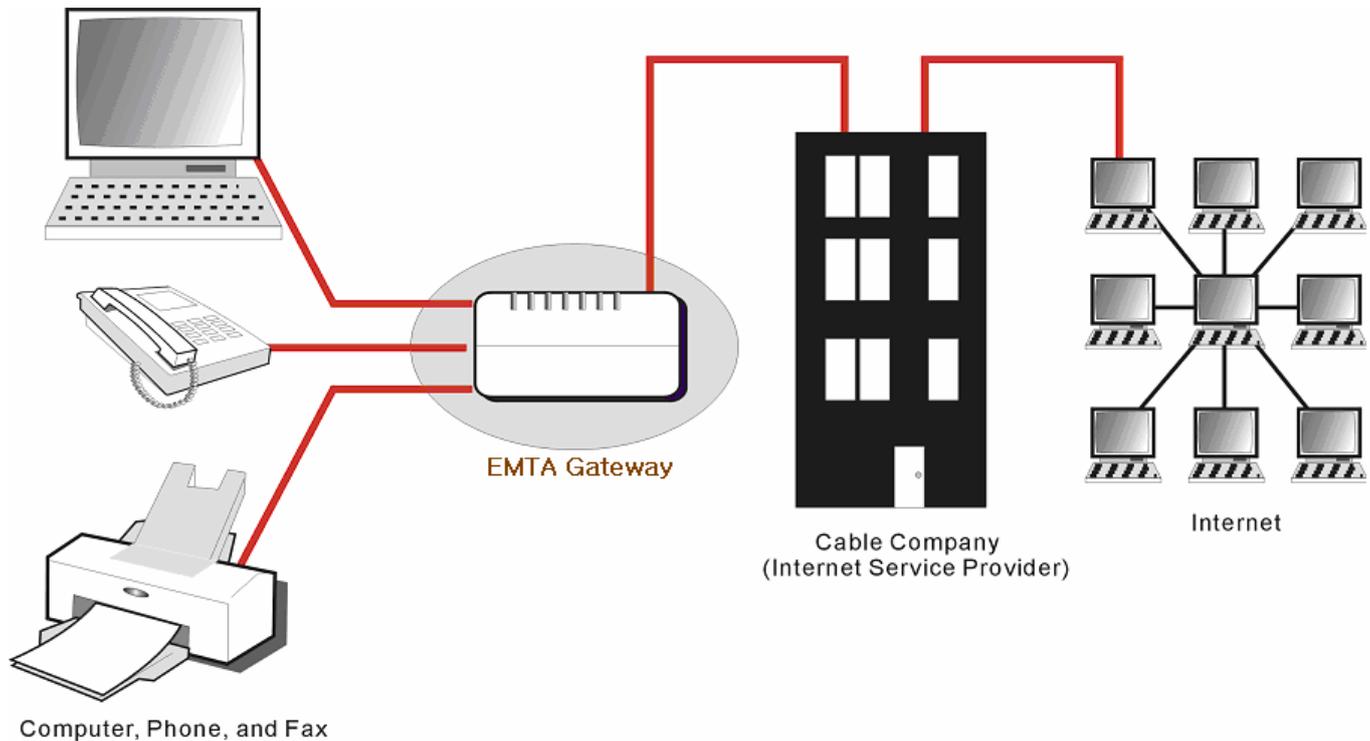
4. Put back the cover of the rear panel.
5. Now, the cable modem is on with the power of the battery. It is not necessary for you to use power adapter again.

# Chapter 1: Connections and Setup

## Relationship among the Devices

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This illustration shows a cable company that offers DOCSIS- and PacketCable-compliant voice/data services.



### What the Modem Does

The Residential Voice Gateway provides high-speed Internet access as well as cost-effective, toll-quality telephone voice and fax/modem services over residential, commercial, and education subscribers on public and private networks via an existing CATV infrastructure. It can inter-operate with the PacketCable compliant headend equipment and provide the IP-based voice communications. The IP traffic can transfer between the Residential Voice Gateway and DOCSIS compliant headend equipment. The data security secures upstream and downstream communications.

### What the Modem Needs to Do Its Job

- **The Right Cable Company:** Make sure your local cable company provides data services that use cable TV industry-standard Euro-DOCSIS or DOCSIS-compliant and Euro-PacketCable or PacketCable-compliant technology.

# Chapter 1: Connections and Setup

- **The Internet/Telephony Service Provider (ISP/TSP):** Your cable company provides you access to an Internet Service Provider (ISP) and Telephony Service Provider (TSP). The ISP is your gateway to the Internet and provides you with a pipeline to access Internet content on the World Wide Web (WWW). The TSP provides you with telephony access to other modems or other telephony services over the Public Switched Telephone Network (PSTN).

Check with your cable company to make sure you have everything you need to begin; they'll know if you need to install special software or re-configure your computer to make your cable internet service work for you.

## Contact Your Local Cable Company

You will need to contact your cable company to establish an Internet account before you can use your gateway. You should have the following information ready (which you will find on the sticker on the gateway):

- The serial number
- The model number
- The Cable Modem (CM) Media Access Control (MAC) address
- The Terminal Adapter (EMTA) MAC address

# Chapter 1: Connections and Setup

## Please verify the following with the cable company

- The cable service to your home supports Euro-DOCSIS or DOCSIS compliant two-way modem access.
- Your internet account has been set up. (The Media Terminal Adapter will provide data service if the cable account is set up but no telephony service is available.)
- You have a cable outlet near your PC and it is ready for Cable Modem service.

*Note: It is important to supply power to the modem at all times. Keeping your modem plugged in will keep it connected to the Internet. This means that it will always be ready whenever you need. To disconnect your computer from the Internet, use the ON/OFF button to put the modem in standby mode.*

## **Important Information**

Your cable company should always be consulted before installing a new cable outlet. Do not attempt any rewiring without contacting your cable company first.

# Chapter 1: Connections and Setup

## Connecting the Residential Voice Gateway to a Single Computer

This section of the manual explains how to connect your Residential Voice Gateway to the USB or Ethernet port on your computer and install the necessary software. Please refer to Figure 1 to help you connect your Digital Cable Modem for the best possible connection.

## Attaching the Cable TV Wire to the Residential Voice Gateway

1. Locate the Cable TV wire. You may find it one of three ways:
  - a. Connected directly to a TV, a Cable TV converter box, or VCR. The line will be connected to the jack which should be labeled either IN, CABLE IN, CATV, CATV IN, etc.
  - b. Connected to a wall-mounted cable outlet.
  - c. Coming out from under a baseboard heater or other location. See Figure 1 for the wiring example.

*Notes: For optimum performance, be sure to connect your Residential Voice Gateway to the first point the cable enters your home. The splitter must be rated for at least 1GHz.*

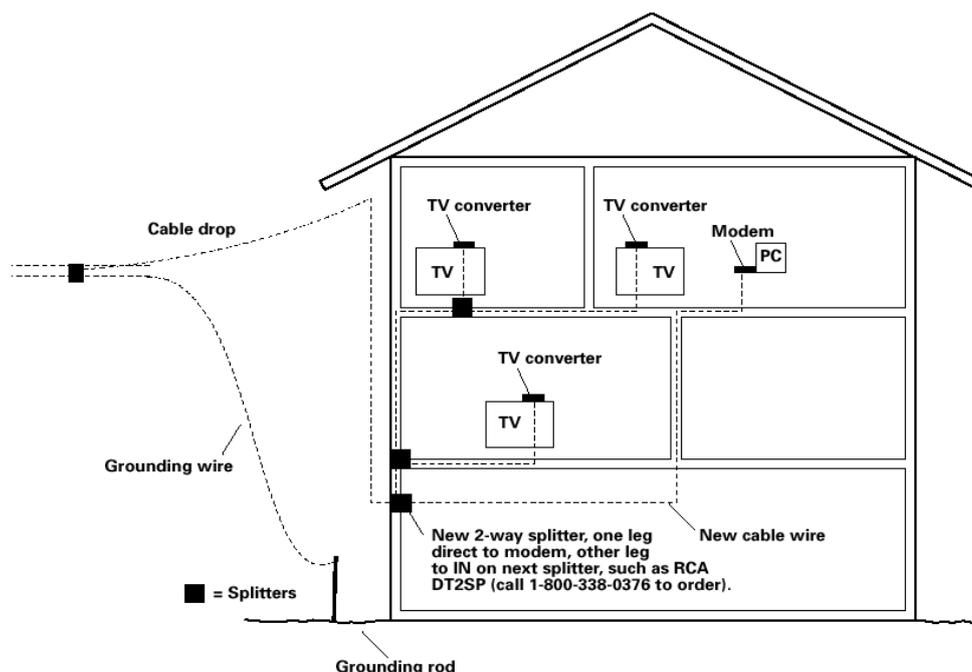


Fig. 1: Basic Home Wiring

# Chapter 1: Connections and Setup

## Important Connection Information

The Residential Voice Gateway supports Ethernet and USB connections simultaneously.

Below are important points to remember before you connect the Residential Voice Gateway.

- For USB connections, follow the instructions on this page.
- For Ethernet connections, go to page 25.
- For telephone and fax connections, go to page 29.

## USB Connection to One Computer

*Note: Only use the power supply provided with this unit. Using other power supplies may damage the unit.*

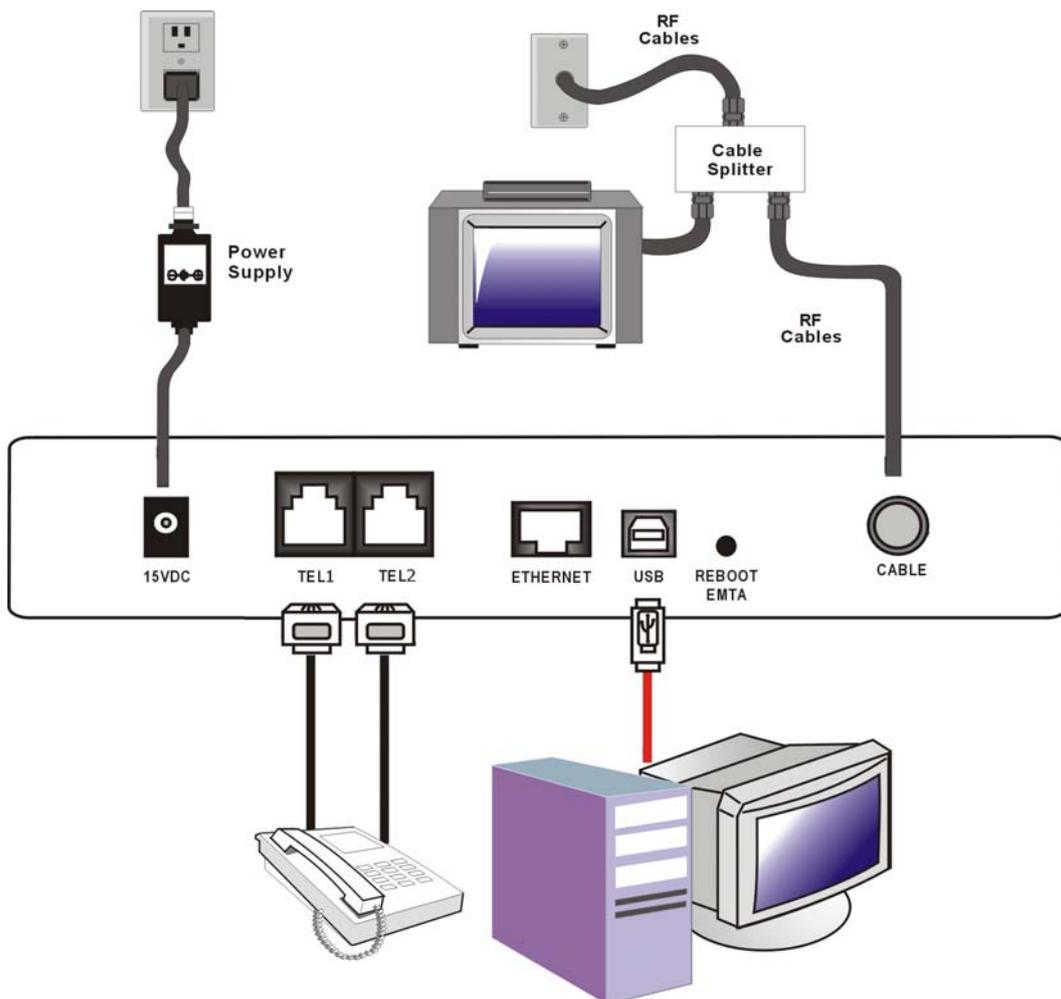
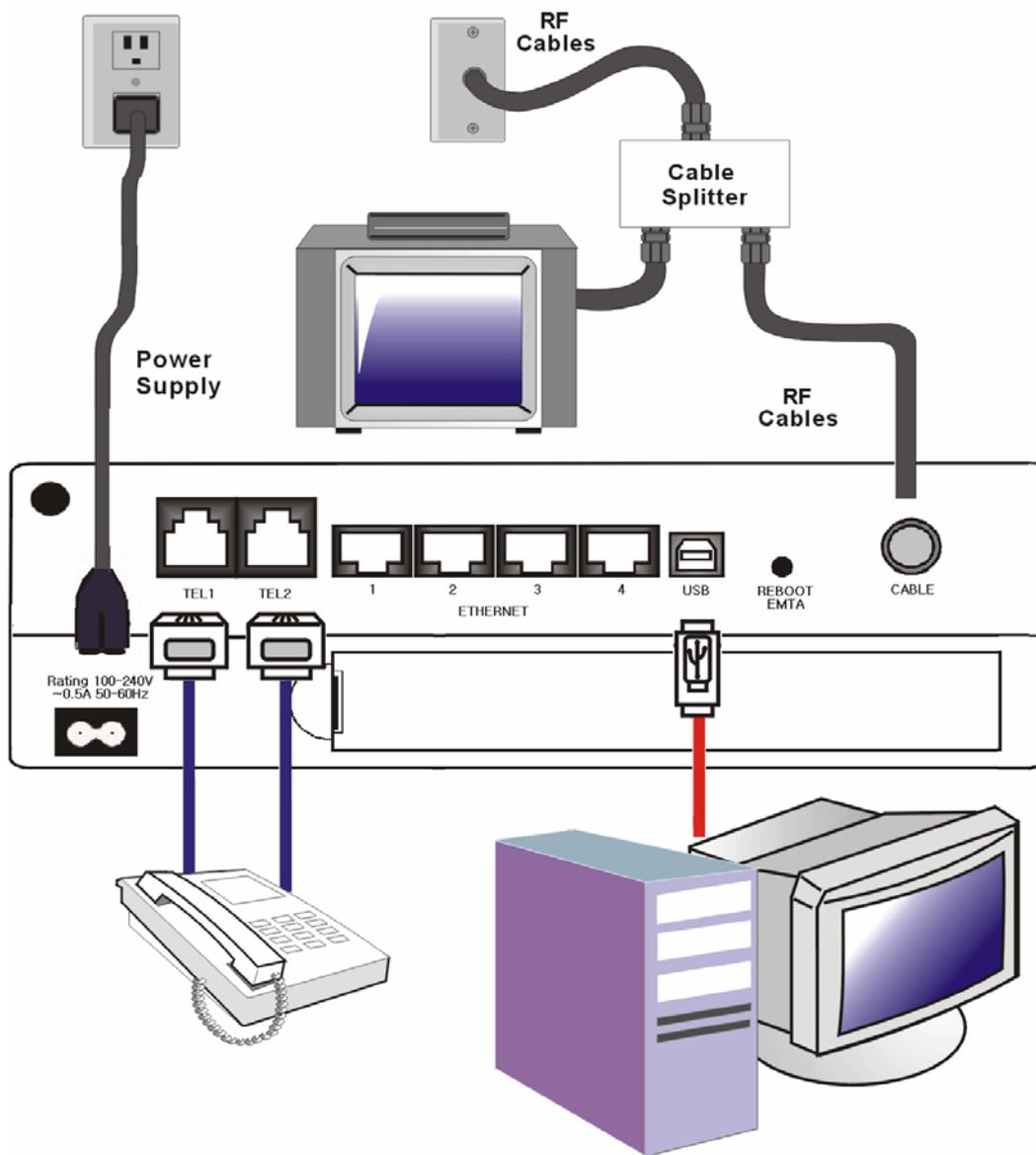


Fig. 2-1: USB Connection on TWG850

# Chapter 1: Connections and Setup



*Fig. 2-2: USB Connection on DWG855*

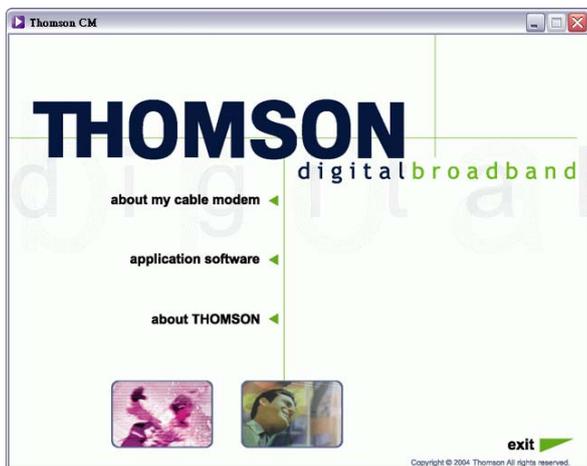
If you received an Installation/Quick Start kit with the purchase of your modem, you should use the software provided in that kit. If not, the Residential Voice Gateway CD included with your modem contains the drivers and other information you need to install your Residential Voice Gateway.

# Chapter 1: Connections and Setup

## USB Connection

If you do not want to use the CD-ROM, follow instructions 1 through 5 to connect the Residential Voice Gateway to the USB port on your computer. **Instructions must be followed in the order they appear.**

1. Connect one end of the coaxial cable to the cable connection in the wall, and the other end to the CABLE jack on the Residential Voice Gateway.
2. Connect the plug from the AC power supply into the POWER AC ADAPTER jack on the Residential Voice Gateway and plug the power supply into an AC outlet.
3. Insert the supplied Residential Voice Gateway CD-ROM. Wait momentarily for the CD window display.



4. Close **all** open applications and dialog boxes, including the CD window.

*Note: Open applications may interfere with your Residential Voice Gateway installation.*

5. Connect one end of the USB cable to the USB port located on the back of your computer. Connect the other end of the USB cable to the USB port on the Residential Voice Gateway.

*Note: Use only the power supply that accompanied this unit. Using other power supplies may damage the unit.*

Next, you need to install the USB driver for your operating system.

## Using Windows 2000 for USB Connection

Follow steps 6 through 14 if you have a Windows 2000 operating system:

# Chapter 1: Connections and Setup

6. When the “Found New Hardware Wizard” appears, click “Next” to initiate the search for drivers for your USB device.



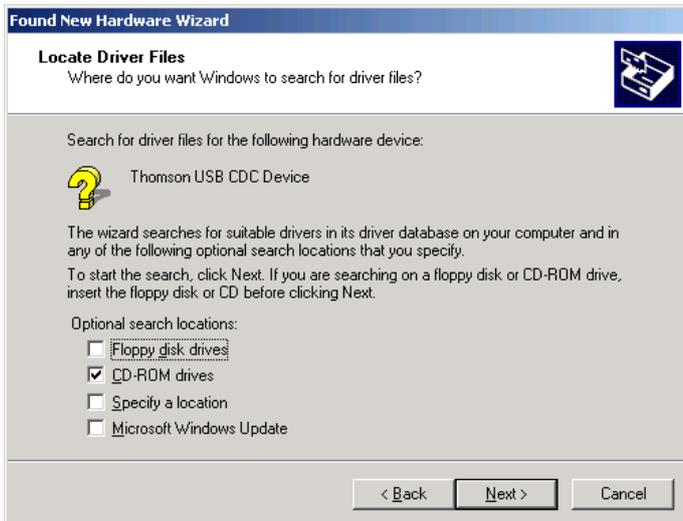
*Note: If Windows 2000 does not recognize the presence of the Residential Voice Gateway, your BIOS settings may not permit USB and/or Plug-and-Play devices. Please contact the customer service department of the computer company.*

7. Choose the “Search for a suitable driver for my device (recommended)” option, and click “Next”.



# Chapter 1: Connections and Setup

8. Choose **ONLY** the “CD-ROM drives” option and click “Next”.



9. The search should find the driver for the “Thomson USB CDC Devices”. To confirm that this is the case, click “Next” to continue and proceed to step 11. Otherwise, see step 10.



*Important: Do NOT continue if the search finds “USB Composite Device” driver. Proceed to step 10.*

10. Follow these instructions **ONLY** if the driver found was NOT the “Thomson USB CDC Devices.”
- Click “Back” to return to the previous window.
  - Ensure that you have selected the “CD-ROM” option.
  - In **addition** to the CD-ROM option, choose “Specify a location.” Click on “Next” to continue.
  - In the location box, type in your CD-ROM drive. For example, if your CD-ROM is located on the E: drive, type “E:\<.” Click on “Ok” to continue.
  - Click “Next” to continue.
  - The search should find either “RCA or Thomson USB Cable Modem”.

# Chapter 1: Connections and Setup

11. Windows should now prompt you to install the “Thomson USB CDC Devices”. Click “Next” to install the driver.

At this point your PC needs to copy Windows 2000 specific files. If these files are not located on your hard drive, you may need to insert your Windows 2000 installation media (i.e., Windows 2000 CD-ROM), but first remove the Residential Voice Gateway CD-ROM.

12. After the Windows specific files are copied, you may be asked for another USB driver file named “NETRCACM.SYS,” located on the Residential Voice Gateway CD-ROM. Remove the Windows 2000 CD-ROM (if necessary), and reinsert the Residential Voice Gateway CD-ROM that accompanied your Residential Voice Gateway.

13. Click on “Finish” to complete the process.



14. The Residential Voice Gateway installation is now complete. To validate a proper installation, perform the following instructions:

- A. Click on the “Start” icon in the lower left-hand corner of your screen.
- B. Select “Settings,” followed by “Control Panel.” The “Control Panel” window appears.
- C. Double-click on the “System” icon, select the “Hardware” tab, and choose “Device Manager.”
- D. Scroll down the list until you come to “Network Adapters.” Double-click on “Network Adapters.”
- E. The “RCA Digital Cable Modem” should exist. If the “RCA or Thomson Digital Cable Modem” does not exist, the Residential Voice Gateway was **NOT** installed correctly. Please install again.

# Chapter 1: Connections and Setup

## Using Windows Me for USB Connection

Follow steps 6 through 9 if you have a Windows Me operating system:

6. Windows Me will briefly display the “Found New Hardware Wizard,” and automatically proceed to the “Add New Hardware Wizard”.

Choose the “Automatic search for a better driver (Recommended)” option, and click “Next.”

*Note: If Windows Me does not recognize the presence of the Residential Voice Gateway, i.e., the “Add New Hardware Wizard” did not automatically appear, your BIOS settings may not permit USB and/or Plug-and-Play devices. Please contact your computer’s customer service department.*

7. The automatic search should find and install the driver for the “RCA or Thomson Digital Cable Modem”. Click on “Finish” to complete the process.



8. When the “System Settings Change” window appears, click “Yes” to restart your computer.



9. The Thomson Digital Cable Modem installation is now complete. To validate a proper installation, perform the following instructions:
  - A. Click on the “Start” icon in the lower left-hand corner of your screen.
  - B. Select “Settings,” followed by “Control Panel.” The “Control Panel” window will appear.
  - C. Double-click on the “System” icon, and select the “Device Manager.”
  - D. Scroll down the list until you come to “Network Adapters.” Double-click on “Network Adapters.”
  - E. The “RCA or Thomson Digital Cable Modem” should exist. If “RCA or Thomson Digital Cable Modem” does not exist, the Digital Cable Modem was **NOT** installed correctly.

# Chapter 1: Connections and Setup

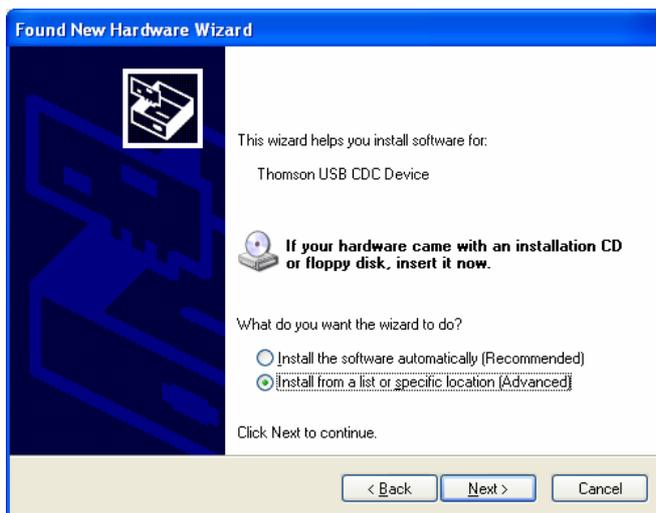
## Using Windows XP for USB Connection

Follow steps 6 through 9 if you have a Windows XP operating system:

6. Windows XP will display the “Welcome to the Found New Hardware Wizard,” and ask whether you would like the Windows to connect to Windows Update to search for software, Choose “No, not this time” and click “Next”.



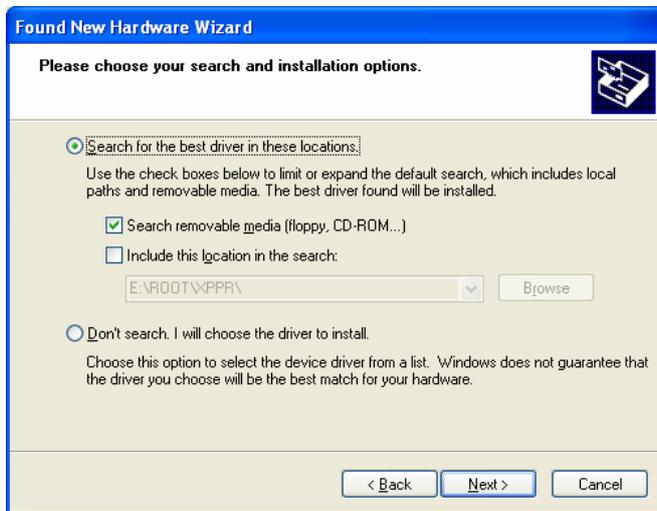
7. The “Found New Hardware Wizard” will then display the device name and ask you to insert the installation CD–ROM that came with the unit. Choose the “Install from a list or specific location (Advanced)” option, and click “Next.”



*Note: If Windows XP does not recognize the presence of the Residential Voice Gateway, i.e., the “Welcome to the New Hardware Wizard” did not automatically appear, your BIOS settings may not permit USB and/or Plug-and-Play devices. Please contact the customer service department of the computer company.*

# Chapter 1: Connections and Setup

8. Select “Search Removable Media (floppy, CD-ROM...)” and click on “Next”, then your computer will install the drivers for the “RCA or Thomson Digital Cable Modem”.



9. When the “Completing the Found New Hardware Wizard” window appears, click “Finish” to complete the process.



10. The Residential Voice Gateway installation is now complete. To validate a proper installation, perform the following instructions:
  - A. Click on the “Start” icon in the lower left-hand corner of your screen.
  - B. Select “Settings,” followed by “Control Panel.” The “Control Panel” window will appear.
  - C. Double-click on the “System” icon, and select the “Device Manager.”
  - D. Scroll down the list until you come to “Network Adapters.” Double-click on “Network Adapters.”
  - E. The “RCA or Thomson Digital Cable Modem” should exist. If “RCA or Thomson Digital Cable Modem” does not exist, the Residential Voice Gateway was **NOT** installed correctly.

# Chapter 1: Connections and Setup

## Ethernet Connection to One Computer

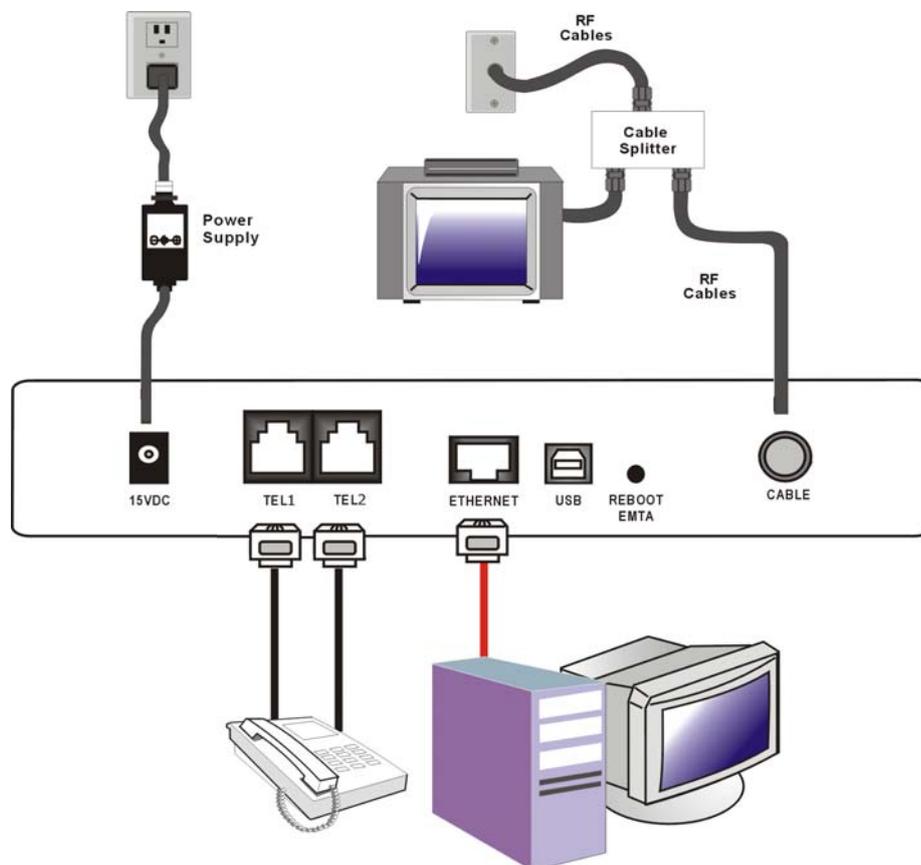
Make the connections to the modem in the following sequence:

1. Connect one end of the coaxial cable to the cable connection in the wall, and the other end to the CABLE jack on the Residential Voice Gateway.
2. Connect the plug from the AC power supply into the POWER AC ADAPTER jack on the Residential Voice Gateway, and plug the power supply into an AC outlet.

*Note: Use only the power supply that accompanied this unit. Using other adapters may damage the unit.*

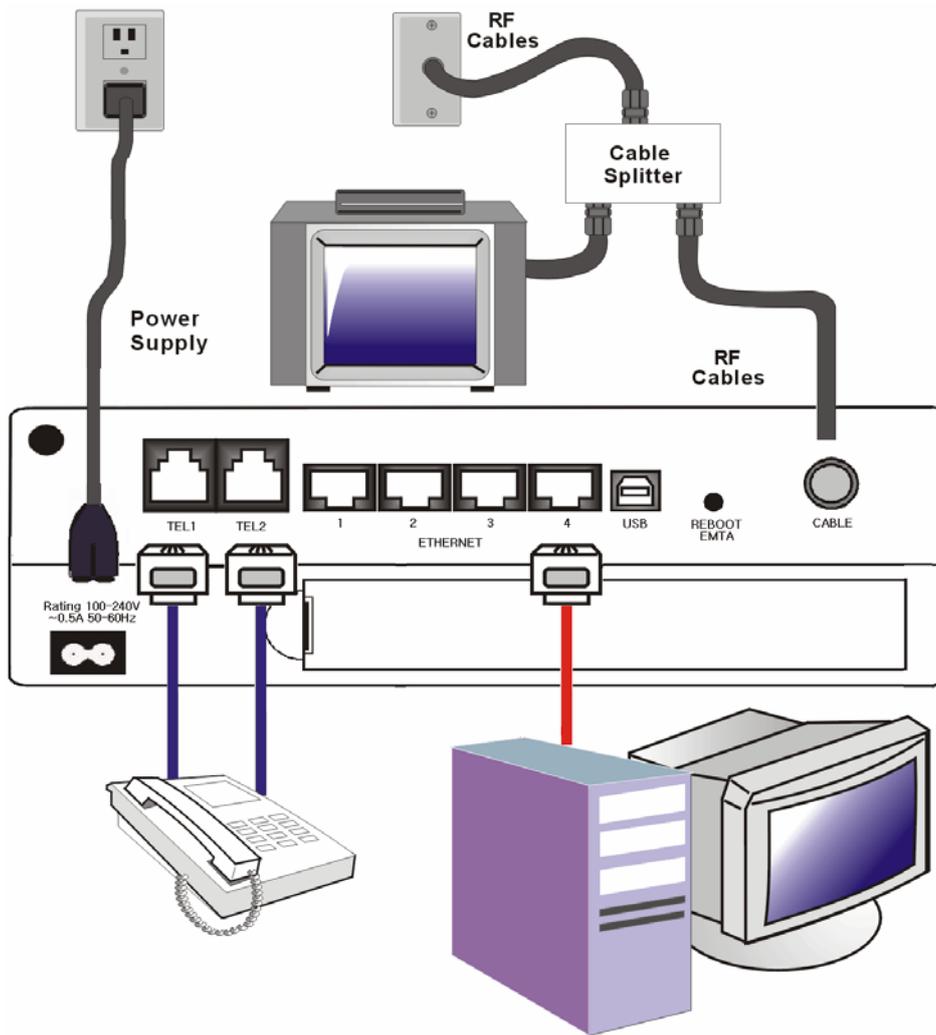
3. Connect one end of the Ethernet cable (straight-wired, see below) to the Ethernet port on the back of your computer, and the other end to the ETHERNET port on the Residential Voice Gateway.

Make sure that the Ethernet cable is straight-wired (not “null” or crossover-wired). However, you will need a crossover-type cable if you are connecting the modem to a hub, or a hub within a port switch that provides the same function.



*Fig.3-1: Ethernet Connection on TWG850*

# Chapter 1: Connections and Setup



*Fig.3-2: Ethernet Connection on DWG855*

# Chapter 1: Connections and Setup

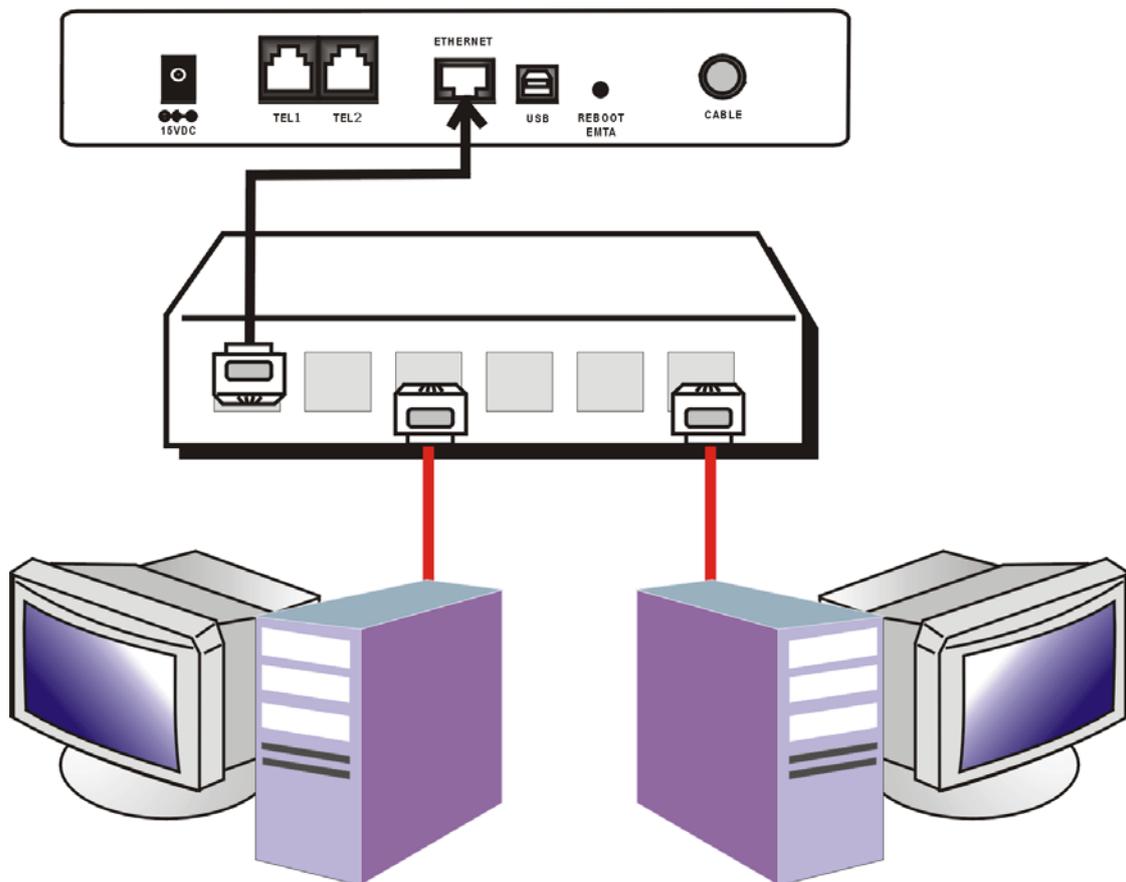
## Connecting More Than Two Computers to the Residential Voice Gateway

For TWG 850, if you need to connect more than two computers or if you need to connect two computers, but USB is not available, you'll need the following additional equipment:

- Crossover-wired, or “null,” category 5 Ethernet cable for the EMTA Gateway to be connected to the hub
- 10BaseT or 100BaseT Hub or Switch
- Straight through, or standard, category 5 Ethernet cable (one for each computer to be connected)

If you have a hub with an uplink port\*, a straight through cable can be used in combination with that port in lieu of the crossover cable.

\*An uplink port has a small switch on it to change the polarity of the connection. It can accept either a crossover or a straight cable, depending on the setting.



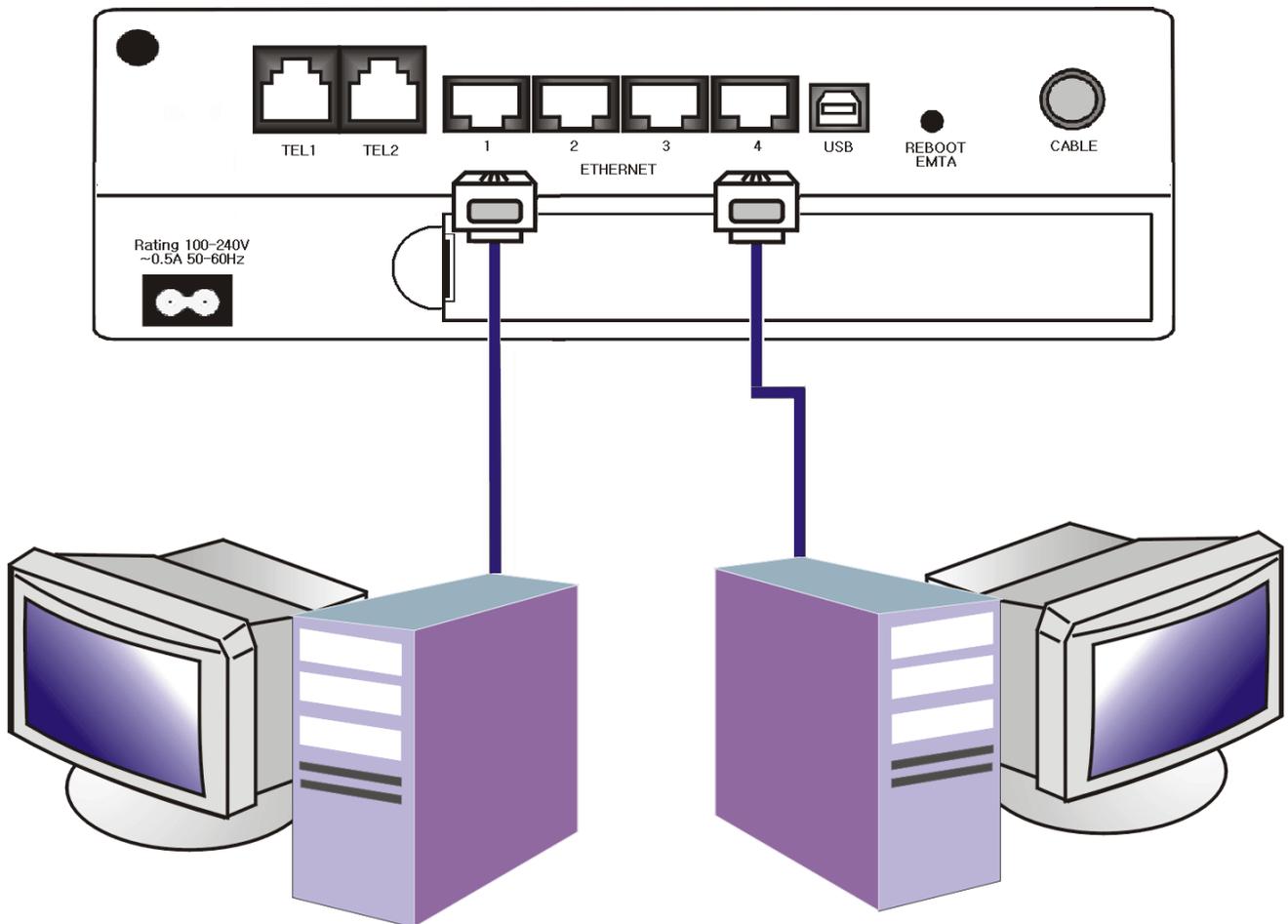
*Fig.4-1: Hub Connection for TWG850*

*Note: You may need to check with your service provider in order to connect multiple computers.*

*Illustrations contained in this document are for representation only.*

# Chapter 1: Connections and Setup

If you need to connect more than two computers to DWG 855, simply connect the computers to the Ethernet ports on the rear panel.



*Fig.4-2: Multiple-PC Connection for DWG855*

*Note: You may need to check with your service provider in order to connect multiple computers.*

# Chapter 1: Connections and Setup

## Telephone or Fax Connection

When properly connected, most telephony devices can be used with the Residential Voice Gateway just as with conventional telephone service. To make a normal telephone call, pick up the handset; listen for a dial tone, then dial the desired number. For services such as call waiting, use the hook switch (or FLASH button) to change calls. The following procedures describe some of the possible connection schemes for using telephony devices with the Residential Voice Gateway.

1. Connect a standard phone line cord directly from the phone (fax machine, answering machine, caller ID box, etc.) to one of the LINE jacks on the Residential Voice Gateway.
2. If there is a phone line in your home which is NOT connected to another telephone service provider, connect a standard phone line cord from a jack on this line to one of the LINE jacks of the Residential Voice Gateway. Connect a standard phone line cord directly from the phone (fax machine, answering machine, caller ID box, etc.) to one of the other jacks in the house that uses that line.
3. If you have a multi-line telephone, connect a standard phone line cord (not an RJ-14 type line cord) from the phone to the LINE jacks on the Residential Voice Gateway. (Other phones can be added to each line by using standard phone line splitters.)

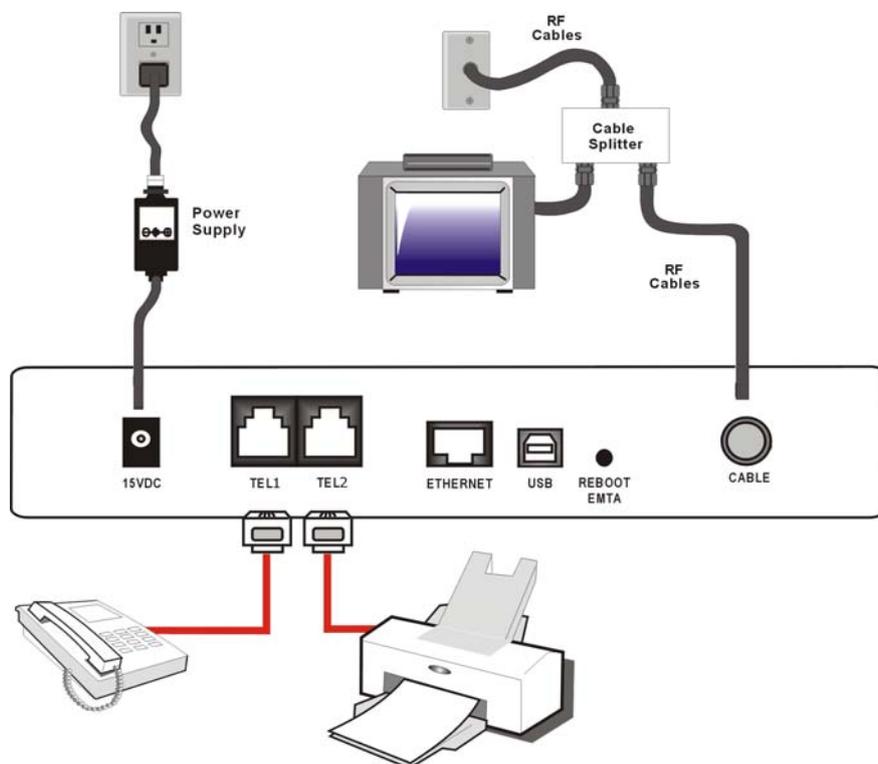
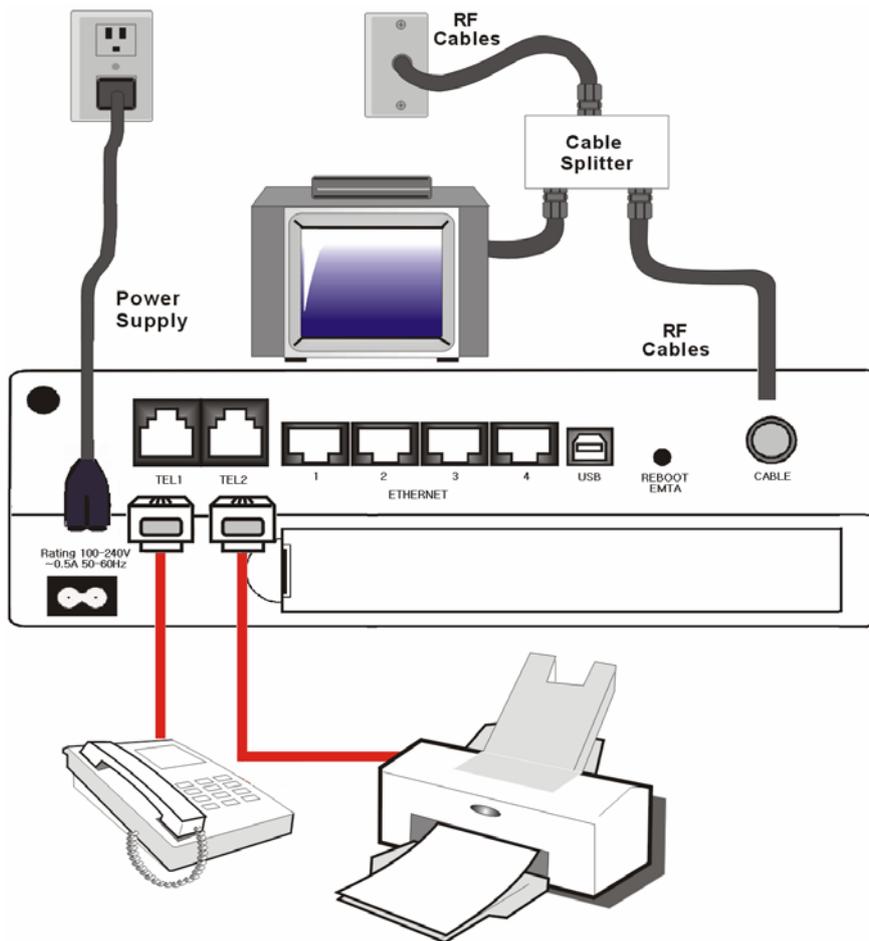


Fig. 5-1: Phone/Fax Connection on TWG850

# Chapter 1: Connections and Setup



*Fig. 5-2: Phone/Fax Connection on DWG855*

# Chapter 1: Connections and Setup

## Activating the Residential Voice Gateway

---

After you install the Residential Voice Gateway and turn it on for the first time (and each time the modem is reconnected to the power), it goes through several steps before it can be used. Each of these steps is represented by a different pattern of flashing lights on the front of the modem.

*Note: All indicators flash once before the initialization sequence.*

If all of the lights are flashing sequentially, it means the Residential Voice Gateway is automatically updating its system software. Please wait for the lights to stop flashing. You cannot use your modem during this time. Do not remove the power supply or reset the Residential Voice Gateway during this process.

# Chapter 1: Connections and Setup

## Chapter 2: Web Configuration

To make sure that you can access the Internet successfully, please check the following first.

1. Make sure the connection (through Ethernet or USB) between the Residential Voice Gateway and your computer is OK.
2. Make sure the TCP/IP protocol is set properly.
3. Subscribe to a Cable Company.

### Accessing the Internet

---

Once your host PC is properly configured; please proceed as follows:

1. Start your web browser and type the private IP address of the Residential Voice Gateway on the URL field: **192.168.0.1**.
2. After connecting to the device, you will be prompted to enter username and password. By default, the username is “ ” and the password is “**admin**”.



If you login successfully, the main page will appear. From now on this Residential Voice Gateway acts as a web server sending HTML pages according to your request. You can configure the settings on the webpage and apply them to the device.

# Chapter 2: Web Configuration

## Outline of Web Manager

The main screen will be shown as below.

The screenshot shows a web management interface with a red header bar containing 'Status' and 'Wireless'. On the left is a blue sidebar with the Thomson logo and a menu with buttons for 'Software', 'Connection', 'Security', and 'Diagnostics'. The main content area is titled 'Status' and contains a 'Software' section with a description. Below this are two tables: 'Information' and 'Status'.

Information	
Standard Specification Compliant	DOCSIS 2.0
Hardware Version	1.0
Software Version	ST78.01.00
Cable Modem MAC Address	00:10:95:de:ad:01
Cable Modem Serial Number	
CM certificate	Not Installed

Status	
System Up Time	0 days 00h:01m:35s
Network Access	Denied
Cable Modem IP Address	0.0.0.0

- Main Menu:** It includes Status and Wireless.
- Title:** It indicates the title of this management interface. e.g., Software in this example.
- Main Window:** It is the current workspace of the web management, containing configuration or status information.

# Chapter 2: Web Configuration

## Status

### Software

This page shows the software and hardware information and the status of the Residential Voice Gateway.

The screenshot shows the Thomson web interface. At the top, there are tabs for 'Status' and 'Wireless'. On the left, there is a navigation menu with buttons for 'Software', 'Connection', 'Security', and 'Diagnostics'. The main content area is titled 'Status' and contains a sub-section 'Software' with the text: 'This page displays information on the current system software.' Below this, there are two tables. The first table is titled 'Information' and lists: Standard Specification Compliant (DOCSIS 2.0), Hardware Version (1.0), Software Version (ST78.01.00), Cable Modem MAC Address (00:10:95:de:ad:01), Cable Modem Serial Number, and CM certificate (Installed). The second table is titled 'Status' and lists: System Up Time (0 days 00h:01m:35s), Network Access (Denied), and Cable Modem IP Address (0.0.0.0).

### Connection

This page shows current connection status containing startup procedures, downstream status, upstream status, CM online information, and so on.

The screenshot shows the Thomson web interface. At the top, there are tabs for 'Status' and 'Wireless'. On the left, there is a navigation menu with buttons for 'Software', 'Connection', 'Security', and 'Diagnostics'. The main content area is titled 'Status' and contains a sub-section 'Connection' with the text: 'This page displays information on the status of the cable modem's HFC and IP network connectivity.' Below this, there are three tables. The first table is titled 'Startup Procedure' and lists: Procedure (Acquire Downstream Channel), Status (In Progress), and Comment. The second table is titled 'Downstream Channel' and lists: Lock Status (Not Locked), Modulation (unknown), Channel ID (0), Symbol rate (Unknown), Downstream Frequency, Downstream Power (12.0 dBmV), and SNR (23.0 dB). The third table is titled 'Upstream Channel' and lists: Lock Status (Not Locked), Modulation (QPSK), Channel ID (0), Symbol rate (0 Ksym/sec), Upstream Frequency, and Upstream Power (8.3 dBmV). At the bottom, there is a table for 'CM IP Address' with columns for Duration and Expires, and a 'Current System Time' field.

# Chapter 2: Web Configuration

## Security

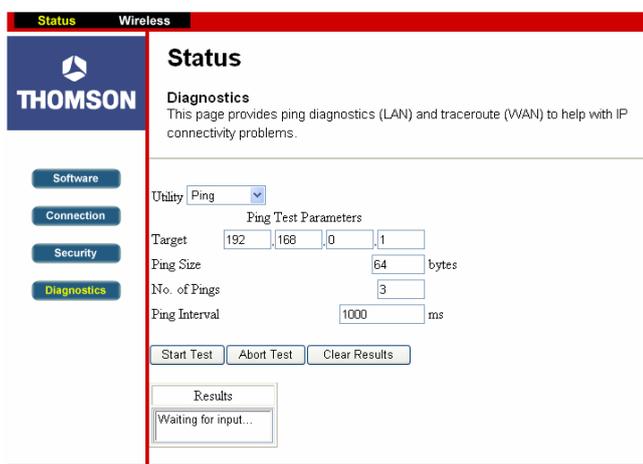
This page is used to change the password that enables you to access the gateway web pages next time. The default User ID is *cablelabs*, and the password is *admin*. The password can be a maximum of 8 characters and is case sensitive. In addition, this page can be used to restore the gateway to its original factory settings. Use this with caution, as all the settings you have made will be lost. To perform this reset, set **Restore Factory Defaults** to **Yes** and click **Apply**. This has the same effect as a factory reset using the rear panel reset switch, where you hold in the switch for 15 seconds, then release.



After proper configuration, click **Apply** to invoke the settings.

## Diagnostics

This page offers basic diagnostic tools for you to utilize when connectivity problems occur. You may use the ping diagnostics or trace route function, just enter the information needed and press **Start Test**; the Result will be displayed in the lower part of the window. Press **Abort Test** to stop, and **Clear Results** to clear the result contents.



# Chapter 2: Web Configuration

## Wireless

### Basic

To set the basic configuration for the wireless features, click **Basic** from the **Wireless** menu.

The screenshot shows the Thomson Wireless configuration interface. At the top, there are tabs for 'Status' and 'Wireless'. The 'Wireless' tab is active. Below the Thomson logo, there are navigation buttons for 'Basic', 'Security', 'Access Control', 'Advanced', and 'Bridging'. The 'Basic' button is highlighted. The main content area is titled 'Wireless' and '802.11b/g Basic'. It contains a description: 'This page allows configuration of the Access Point parameters, including the SSID and channel number.' Below this, the 'Wireless MAC Address' is displayed as '00:10:18:DE:AD:11'. The 'Network Name (SSID)' is 'THOMSON'. The 'Network Type' is 'Open'. The 'Country' is 'USA'. The 'Channel' is '1' and the 'Current' channel is '1'. The 'Interface' is 'Enabled'. There are 'Apply' and 'Restore Wireless Defaults' buttons. Below this, there is a 'SecureEasySetup' section with the text 'Use these buttons to manage your SecureEasySetup network.' and two buttons: 'Create SES Network' and 'Open SES Window'.

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**Wireless Mac Address:** Displays the Wireless Mac Address information.

#### **Network Name (SSID):**

The SSID is the identification of this device; the system will detect the SSID and display it in this field for your reference. You may modify it.

#### **Network Type:**

If you choose **Open**, the EMTA will periodically broadcast its SSID to allow the wireless clients within the range to recognize its presence. You may choose **Closed** to hide the SSID.

#### **Country:**

Please select a proper location from the drop down menu.

#### **Channel:**

There are 11 channels that you can choose. Choose the one that is suitable for this device. The channel that you currently use will be displayed after **Current**.

#### **Interface:**

Choose **Enabled** to enable the wireless settings. Choose **Disabled** to close the wireless function.

#### **Apply:**

After proper configuration, click Apply to invoke the settings.

#### **Restore Wireless Defaults:**

Click this button to restore the device to the factory defaults for wireless settings.

# Chapter 2: Web Configuration

## SecureEasySetup

Use these buttons to manage your SecureEasySetup network.

Create SES Network

Open SES Window

### SecureEasySetup:

It radically simplifies Wi-Fi® wireless LAN configuration, allowing even first-time Wi-Fi users to setup and secure their wireless networks with the push of a button.

### Create SES Network:

Press this button to create the SES network environment.

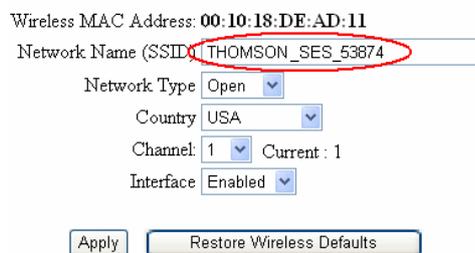


A dialog window will show up while creating the SES network.



When the SES network is created, the dialog window will display a success message.

After creating the SES network, the SSID will be changed, as the following figure shows.



### Open SES Window:

Press this button to open the SES window.



At this moment, if the client device supports SES function, the user only has to push a corresponding button on device, and the connection process will start automatically and Wi-Fi Protected Access (WPA) will be activated simultaneously.

# Chapter 2: Web Configuration

## Security

This page allows you to configure the Network Authentication. Here provides several different modes of wireless security. You will have to enter proper information according to the mode you select.

The screenshot shows the Thomson Wireless configuration interface. The top navigation bar includes 'Status' and 'Wireless'. The left sidebar has buttons for 'Basic', 'Security', 'Access Control', 'Advanced', and 'Bridging'. The main content area is titled 'Wireless' and '802.11b/g Privacy'. It contains the following fields and controls:

- WPA: Disabled (dropdown)
- WPA-PSK: Disabled (dropdown)
- WPA2: Disabled (dropdown)
- WPA2-PSK: Disabled (dropdown)
- WPA/WPA2 Encryption: TKIP (dropdown)
- WPA Pre-Shared Key: [text input]
- RADIUS Server: 0.0.0.0 (text input)
- RADIUS Port: 1812 (text input)
- RADIUS Key: [text input]
- Group Key Rotation Interval: 0 (text input)
- WPA/WPA2 Re-auth Interval: 3600 (text input)
- WEP Encryption: Disabled (dropdown)
- Shared Key Authentication: Optional (dropdown)
- 802.1x Authentication: Disabled (dropdown)
- Network Key 1: [text input]
- Network Key 2: [text input]
- Network Key 3: [text input]
- Network Key 4: [text input]
- Current Network Key: 2 (dropdown)
- PassPhrase: [text input]
- Buttons: 'Apply', 'Generate WEP Keys'

### WPA (Wi-Fi Protected Access)/WPA2:

It must be used in conjunction with an authentication server such as RADIUS to provide centralized access control and management. It can provide stronger encryption and authentication solution than none WPA modes. **WPA2** is the second generation of **WPA** security

### WPA-PSK (WPA-Pre-Shared Key) /WPA2-PSK (WPA2-Pre-Shared Key):

It is useful for small places without authentication servers such as the network at home. It allows the use of manually-entered keys or passwords and is designed to be easily set up for home users.

### WEP Encryption:

You can choose **64-bit** or **128-bit** according to your needs. If you choose **Disabled**, the Network Keys will not be shown on this page. If selected, the data is encrypted using the key before being transmitted. For example, if you set 128-bit in this field, then the receiving station must be set to use the 128 Bit Encryption, and have the same Key value too. Otherwise, it will not be able to decrypt the data.

### Apply:

After proper configuration, click Apply to invoke the settings.

*Illustrations contained in this document are for representation only.*

# Chapter 2: Web Configuration

## WEP Encryption

The screenshot shows the WEP Encryption configuration interface. It includes the following fields and controls:

- WEP Encryption: WEP (64-bit) (dropdown menu)
- Shared Key Authentication: Optional (dropdown menu)
- 802.1x Authentication: Disabled (dropdown menu)
- Network Key 1: [Empty text box]
- Network Key 2: [Empty text box]
- Network Key 3: [Empty text box]
- Network Key 4: [Empty text box]
- Current Network Key: 2 (dropdown menu)
- PassPhrase: [Empty text box]
- Buttons: "Generate WEP Keys" and "Apply"

If you select WEP (64-bit or 128-bit), you can adjust the following settings-

### Shared Key Authentication:

Decide whether to set the shared key **Optional** or **Required** by selecting from the drop-down menu.

### Network Key 1 to 4:

The system allows you to enter four sets of the WEP key. For **64-bit** WEP mode, the key length is 5 characters or 10 hexadecimal digits. As for **128-bit** WEP mode, the key length is 13 characters or 26 hexadecimal digits.

### Current Network Key:

Select one set of the network key (from 1 to 4) as the default one.

### PassPhrase:

You can enter ASCII codes into this field. The range is from 8 characters to 64 characters. For **ASCII characters**, you can key in **63** characters in this field. If you want to key in **64** characters, only **hexadecimal characters** can be used.

### Generate WEP Keys:

Click this button to generate the PassPhrase.

## 802.1x Authentication

The screenshot shows the 802.1x Authentication configuration interface. It includes the following fields and controls:

- WPA/WPA2 Encryption: Disabled (dropdown menu)
- WPA Pre-Shared Key: [Greyed out text box]
- RADIUS Server: 0.0.0.0 (text box)
- RADIUS Port: 1812 (text box)
- RADIUS Key: [Empty text box]
- Group Key Rotation Interval: 0 (text box)
- WPA/WPA2 Re-auth Interval: 3600 (text box)
- WEP Encryption: WEP (128-bit) (dropdown menu)
- Shared Key Authentication: Optional (dropdown menu)
- 802.1x Authentication: Enabled (dropdown menu)
- Network Key 1: [Greyed out text box]
- Network Key 2: [Empty text box]
- Network Key 3: [Empty text box]
- Network Key 4: [Greyed out text box]
- Current Network Key: 1 (dropdown menu)
- PassPhrase: [Empty text box]
- Buttons: "Generate WEP Keys" and "Apply"

If you enable the **802.1x authentication** function, you will have to offer the following information-

### RADIUS Server:

RADIUS Server is a protocol for carrying authentication, authorization, and configuration information between a Network Access Server which desires to authenticate its links and a shared Authentication Server. Please key in the IP Address for the RADIUS Server.

### RADIUS Port:

Besides the IP address of the RADIUS Server, you have to enter the port number for the server. Port 1812 is the reserved RADIUS-authentication port described in RFC 2138. Earlier AP (RADIUS clients) use port 1945. The default value will be shown on this box. You can keep and use it.

### RADIUS Key:

A RADIUS Key is like a password, which is used between IAS and the specific RADIUS client to verify identity. Both IAS and the RADIUS client must be use the same RADIUS Key for successful communication to occur. Enter the RADIUS Key.

# Chapter 2: Web Configuration

## WPA/WPA2

WPA  ▾  
WPA-PSK  ▾  
WPA2  ▾  
WPA2-PSK  ▾

WPA/WPA2 Encryption  ▾  
WPA Pre-Shared Key   
RADIUS Server   
RADIUS Port   
RADIUS Key

Group Key Rotation Interval   
WPA/WPA2 Re-auth Interval

For the WPA/WPA2 network Authentication, the settings that you can adjust including WPA/WPA2 Encryption, RADIUS Server, RADIUS Port, RADIUS Key, Group Key Rotation Interval, and WPA/WPA2 Re-auth Interval.

### WPA/WPA2 Encryption:

There are three types that you can choose, **TKIP\***, **AES\*\***, **TKIP+AES**.

\* **TKIP** takes the original master key only as a starting point and derives its encryption keys mathematically from this mater key. Then it regularly changes and rotates the encryption keys so that the same encryption key will never be used twice

\*\* **AES** provides security between client workstations operating in ad hoc mode. It uses a mathematical ciphering algorithm that employs variable key sizes of 128, 192 or 256 bits.

### RADIUS Server/RADIUS Port/RADIUS Key:

Please refer to the previous page.

### Group Key Rotation Interval:

Key in the time for the WAP group key rotation interval. The unit is second. With increasing rekey interval, user bandwidth requirement is reduced.

### WPA/WPA2 Re-auth Interval:

When a wireless client has associated with the Residential Voice Gateway for a period of time longer than the setting here, it would be disconnected and the authentication will be executed again. The default value is *3600*, you may modify it.

## WPA-PSK/ WPA2-PSK

WPA  ▾  
WPA-PSK  ▾  
WPA2  ▾  
WPA2-PSK  ▾

WPA/WPA2 Encryption  ▾  
WPA Pre-Shared Key   
RADIUS Server   
RADIUS Port   
RADIUS Key

Group Key Rotation Interval   
WPA/WPA2 Re-auth Interval

For the WPA-PSK/WPA2-PSK network Authentication, the settings that you can adjust including WPA/WPA2 Encryption, WPA Pre-Shared Key, and Group key Rotation Interval.

### WPA Pre-Shared Key:

Please type the key to be between 8 and 63 characters, or 64 hexadecimal digits. Only the devices with a matching key that you set here can join this network.

### WPA/WPA2 Encryption & WPA Group Rekey Interval:

Please refer to the WPA/WPA2 part.

# Chapter 2: Web Configuration

## Access Control

This page allows you to make access control to the AP or connected clients by offering the MAC Addresses of the clients.

The screenshot shows the Thomson Wireless web interface for 802.11b/g Access Control. The top navigation bar includes 'Status' and 'Wireless'. The left sidebar contains menu items: 'Basic', 'Security', 'Access Control' (highlighted), 'Advanced', and 'Bridging'. The main content area is titled 'Wireless' and '802.11b/g Access Control', with a description: 'This page allows configuration of the Access Control to the AP as well as status on the connected clients.' Below this, there is a 'MAC Restrict Mode' dropdown menu set to 'Disabled'. Underneath is a table of 'MAC Addresses' with 10 empty input fields arranged in two columns. An 'Apply' button is located below the table. At the bottom, a 'Connected Clients' table has headers: 'MAC Address', 'Age(s)', 'RSSI(dBm)', 'IP Addr', and 'Host Name'. The table content shows 'No wireless clients are connected.'

### MAC Restrict Mode:

Click **Disabled** to welcome all of the clients on the network; select **Allow** to permit only the clients on the list to access the cable modem; or choose **Deny** to prevent the clients on the list to access this device.

### MAC Address:

Enter the MAC addresses of the connected clients into the fields, and then click Apply to add them to the list for access control.

### Apply:

After proper configuration, click Apply to invoke the settings.

### Connected Clients:

The information of current connected clients will be displayed here.

# Chapter 2: Web Configuration

## Advanced

This page allows you to configure the data rates and Wi-Fi thresholds.

The screenshot shows the Thomson Wireless configuration interface. At the top, there are tabs for 'Status' and 'Wireless'. Below the Thomson logo, there are navigation buttons for 'Basic', 'Security', 'Access Control', 'Advanced' (highlighted), and 'Bridging'. The main content area is titled 'Wireless' and '802.11b/g Advanced'. It contains the following settings:

- 54g™ Network Mode: Max Compatibility (dropdown)
- 54g™ Protection: Auto (dropdown)
- XPress™ Technology: Disabled (dropdown)
- Afterburner™ Technology: Disabled (dropdown)
- Rate: Auto (dropdown)
- Output Power: 100% (dropdown)
- Beacon Interval: 100 (text input)
- DTIM Interval: 1 (text input)
- Fragmentation Threshold: 2346 (text input)
- RTS Threshold: 2347 (text input)

An 'Apply' button is located at the bottom of the settings area.

### 54g™ Network Mode:

There are three modes for you to choose, please check the specification of your wireless card and choose a proper setting.

### 54g™ Protection:

Select **Auto** to turn on the 54g™ protection; select **Off** to turn down the protection.

### Xpress™ Technology:

When Xpress is turned on, aggregate throughput (the sum of the individual throughput speeds of each client on the network) can improve by **up to 27%** in 802.11g-only networks, and **up to 75%** in mixed networks comprised of 802.11g and 802.11b standard equipment.

Click **Enabled** to start this function; choose **Disabled** to close this function.

### Afterburner™ Technology:

When enabled, the data transmission will be faster for the clients. Yet, the clients must support 125Mbps throughput, then you can choose **Enabled**. Otherwise, choose **Disabled**.

### Rate:

It decides the speed of data transmission. There are several rates provided here for you to choose. Choose any one of it according to your needs by using the drop-down menu.

### Output Power:

This setting decides the output power of this device. You may use it to economize on electricity by selecting lower percentage of power output.

### Beacon Interval:

Set the period of beacon transmissions to allow mobile stations to locate and identify a BSS. The measure unit is "time units" (TU) of 1024 microseconds.

### DTIM Interval:

The value you set here is used to inform mobile stations when multicast frames that have been buffered at the Residential Voice Gateway will be delivered and how often that delivery occurs.

## Chapter 2: Web Configuration

### Fragmentation Threshold:

Set the number of the fragmenting frames to make the data to be delivered without errors induced by the interference. Frames longer than the value you set here are fragmented before the initial transmission into fragments no longer than the value of the threshold.

### RTS Threshold:

Set the value for sending a request to the destination. All the frames of a length greater than the threshold that you set here will be sent with the four-way frame exchange. And, a length less than or equal to the value that you set will not be proceeded by RTS.

### Apply:

After proper configuration, click Apply to invoke the settings.

## Bridging

This page allows you to configure the WDS features.

WDS (**Wireless Distribution System**) is a system that enables the interconnection of access points wirelessly. It may also be referred to as repeater mode because it appears to bridge and accept wireless clients at the same time (unlike traditional bridging).

The screenshot shows a web configuration interface for Thomson wireless devices. At the top, there is a red navigation bar with 'Status' and 'Wireless' tabs. On the left, a blue sidebar features the Thomson logo and a vertical menu with buttons for 'Basic', 'Security', 'Access Control', 'Advanced', and 'Bridging'. The 'Bridging' button is highlighted. The main content area is titled 'Wireless Bridging' and contains the text: 'This page allows configuration of WDS features.' Below this, there is a dropdown menu labeled 'Wireless Bridging' with 'Disabled' selected. Underneath are four empty text input fields for 'Remote Bridges'. At the bottom of the configuration area is an 'Apply' button.

### Wireless Bridging:

Choose **Disabled** to shutdown this function; select **Enabled** to turn on the function of WDS.

### Remote Bridges:

Enter the MAC Addresses of the remote Bridges to relay the signals for each other.

### Apply:

After proper configuration, click Apply to invoke the settings.

# Chapter 3: Additional Information

## Frequently Asked Questions

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***Q. What if I don't subscribe to cable TV?***

A. If cable TV is available in your area, data and voice service may be made available with or without cable TV service. Contact your local cable company for complete information on cable services, including high-speed internet access.

***Q. How do I get the system installed?***

A. Professional installation from your cable provider is strongly recommended. They will ensure proper cable connection to the modem and your computer. However, your retailer may have offered a self installation kit, including the necessary software to communicate with your cable ISP.

***Q. Once my Residential Voice Gateway is connected, how do I get access to the Internet?***

A. Your local cable company provides your internet service\*, offering a wide range of services including email, chat, and news and information services, and a connection to the World Wide Web.

***Q. Can I watch TV, surf the Internet, and talk to my friends through the Residential Voice Gateway at the same time?***

A. Absolutely!

***Q. What do you mean by "Broadband?"***

A. Simply put, it means you'll be getting information through a "bigger pipe," with more bandwidth, than a standard phone line can offer. A wider, "broader" band means more information, more quickly.

***Q. What is EURO-DOCSIS/DOCSIS and what does it mean?***

A. "Data over Cable Service Interface Specifications" is the industry standard that most cable companies are adopting as they upgrade their systems. Should you ever decide to move, the Cable Modem will work with all upgraded cable systems that are EURO-DOCSIS/DOCSIS-compliant.

***Q. What is Euro-PacketCable/PacketCable and what does it mean?***

A. Like DOCSIS, Euro-PacketCable/PacketCable is the industry standard for telephony services that most cable companies are adopting as they upgrade their systems. Should you ever decide

## Chapter 3: Additional Information

to move, the Residential Voice Gateway will work with all upgraded cable systems that are Euro-PacketCable/PacketCable-compliant.

***Q. What is SecureEasySetup and what does it mean?***

A. The software radically simplifies Wi-Fi® wireless LAN configuration, allowing even first-time Wi-Fi users to setup and secure their wireless networks with the push of a button. Whereas a typical Wi-Fi installation requires a user to manually configure several technical settings on each wireless device, SecureEasySetup simply requires a user to push a button on the wireless router/ Access Point, and a corresponding button on the PC or other client device. This automates the connection process and activates Wi-Fi Protected Access (WPA), the strongest security standard available to protect home and small business wireless networks from unauthorized use.

***Q. What is Xpress Technology and what does it mean?***

A. It is one of the popular performance-enhancing WiFi technologies, designed to improve wireless network efficiency and boost throughput. It is more efficient in mixed environments, and it can work with 802.11a/b/g networks. When Xpress is turned on, aggregate throughput (the sum of the individual throughput speeds of each client on the network) can improve by **up to 27%** in 802.11g-only networks, and **up to 75%** in mixed networks comprised of 802.11g and 802.11b standard equipment. The technology achieves higher throughput by re-packaging data, reducing the number of overhead control packets, so that more useful data can be sent during a given amount of time.

\* Monthly subscription fee applies.

# Chapter 3: Additional Information

## General Troubleshooting

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You can correct most problems you have with your product by consulting the troubleshooting list that follows.

### **I can't access the internet.**

- Check all of the connections to your Residential Voice Gateway.
- Your Ethernet card or USB port may not be working. Check each product's documentation for more information.
- The Network Properties of your operating system may not be installed correctly or the settings may be incorrect. Check with your ISP or cable company.

### **All of the lights are flashing in sequence.**

- This means the Residential Voice Gateway is automatically updating its system software. Please wait for the lights to stop flashing. The updating process typically lasts less than one minute.
- Do not remove the power supply or reset the Residential Voice Gateway during this process.

### **I can't get the modem to establish an Ethernet connection.**

- Even new computers don't always have Ethernet capabilities – be sure to verify that your computer has a properly installed Ethernet card and the driver software to support it.
- Check to see that you are using the right type of Ethernet cable.

### **The modem won't register a cable connection (CABLE LINK light not on continuously).**

- If the modem is in Initialization Mode, the INTERNET light will be flashing. Call your Cable Company if it has not completed this 5-step process within 30 minutes, and note which step it is getting stuck on. (See page 24 for details.)
- The modem should work with a standard RG-6 coaxial cable, but if you're using a cable other than one your Cable Company recommends, or if the terminal connections are loose, it may not work. Check with your Cable Company to determine whether you're using the correct cable.

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- If you subscribe to video service over cable, the cable signal may not be reaching the modem. Confirm that good quality cable television pictures are available to the coaxial connector you are using by connecting a television to it. If your cable outlet is “dead”, call your Cable Company.
- Verify that the Cable Modem service is DOCSIS-compliant and PacketCable-compliant by calling your cable provider.

### **I don't hear a dial tone when I use a telephone.**

- Telephone service is not activated. If the rightmost light on the Residential Voice Gateway stays on while others flash, check with your TSP or cable company.
- If the Residential Voice Gateway is connected to existing house telephone wiring, make sure that another telephone service is not connected. The other service can normally be disconnected at the Network Interface Device located on the outside of the house.
- If using the second line on a two-line telephone, use a 2-line to 1-line adapter cable.

For more Usage and Troubleshooting Tips use the web site links provided on the CD-ROM:

<http://www.cable-modem.rca.com/help>

# Chapter 3: Additional Information

## FCC Declaration of Conformity and Industry Canada Information

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Trade Name:	RCA Model: TWG850/DWG855
Equipment Classification:	Computing Device Accessory
Responsible Party:	Thomson Inc. 10330 N. Meridian Street Indianapolis, IN 46290 Telephone 317-415-4151

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect this equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC regulations state that unauthorized changes or modifications to this equipment may void the user's authority to operate it.

This Class B digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations.

## Chapter 3: Additional Information

### Service Information

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If you purchased or leased your Residential Voice Gateway directly from your cable company, then warranty service for the Digital Cable Modem may be provided through your cable provider or its authorized representative. For information on 1) Ordering Service, 2) Obtaining Customer Support, or 3) Additional Service Information, please contact your cable company. If you purchased your Residential Voice Gateway from a retailer, see the enclosed warranty card.

# Chapter 3: Additional Information

## Glossary

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**10BaseT** – Unshielded, twisted pair cable with an RJ-45 connector, used with Ethernet LAN (Local Area Network). “10” indicates speed (10 Mbps), “Base” refers to baseband technology, and “T” means twisted pair cable.

**Authentication** – The process of verifying the identity of an entity on a network.

**DHCP (Dynamic Host Control Protocol)** – A protocol which allows a server to dynamically assign IP addresses to workstations on the fly.

**Ethernet card** – A plug-in circuit board installed in an expansion slot of a personal computer. The Ethernet card (sometimes called a Network Interface Card or NIC) takes parallel data from the computer, converts it to serial data, puts it into a packet format, and sends it over the 10BaseT or 100BaseT LAN cable.

**EURO-DOCSIS/ DOCSIS (Data Over Cable Service Interface Specifications)** – A project with the objective of developing a set of necessary specifications and operations support interface specifications for Cable Modems and associated equipment.

**F Connector** – A type of coaxial connector, labeled CABLE IN on the rear of the Residential Voice Gateway, that connects the modem to the cable system.

**HTTP (HyperText Transfer Protocol)** – Invisible to the user, HTTP is used by servers and clients to communicate and display information on a client browser.

**Hub** – A device used to connect multiple computers to the Residential Voice Gateway.

**IP Address** – A unique, 32-bit address assigned to every device in a network. An IP (Internet Protocol) address has two parts: a network address and a host address. This modem receives a new IP address from your cable operator via DHCP each time it goes through Initialization Mode.

**Key exchange** – The swapping of mathematical values between entities on a network in order to allow encrypted communication between them.

**MAC Address** – The permanent “identity” for a device programmed into the Media Access Control layer in the network architecture during the modem’s manufacture.

**Network Driver** – A file that is loaded on the computer to allow the computer to recognize the Ethernet card or USB port.

**NID** – Network Interface Device, the interconnection between the internal house telephone wiring

## Chapter 3: Additional Information

and a conventional telephone service provider's equipment. These wiring connections are normally housed in a small plastic box located on an outer wall of the house. It is the legal demarcation between the subscriber's property and the service provider's property.

**Euro-PacketCable/ PacketCable** – A project with the objective of developing a set of necessary telephony specifications and operations support interface specifications for Residential Voice Gateways and associated equipment used over the DOCSIS-based cable network.

**PSTN (Public Switched Telephone Network)** – The worldwide voice telephone network which provides dial tone, ringing, full-duplex voice band audio and optional services using standard telephones.

**Provisioning** – The process of enabling the Media Terminal Adapter (MTA) to register and provide services over the network.

**SecureEasySetup** – The software radically simplifies Wi-Fi® wireless LAN configuration, allowing even first-time Wi-Fi users to setup and secure their wireless networks with the push of a button. Whereas a typical Wi-Fi installation requires a user to manually configure several technical settings on each wireless device, SecureEasySetup simply requires a user to push a button on the wireless router/ Access Point, and a corresponding button on the PC or other client device. This automates the connection process and activates Wi-Fi Protected Access (WPA), the strongest security standard available to protect home and small business wireless networks from unauthorized use.

**TCP/IP (Transmission Control Protocol/Internet Protocol)** – A networking protocol that provides communication across interconnected networks, between computers with diverse hardware architectures and various operating systems.

**TFTP** – Trivial File Transfer Protocol, the system by which the Media Terminal Adapter's configuration data file is downloaded.

**TSP** – Telephony Service Provider, an organization that provides telephone services such as dial tone, local service, long distance, billing and records, and maintenance.

**Universal Serial Bus (USB)** – USB is a “plug-and-play” interface between a computer and add-on devices, such as an Residential Voice Gateway.

**Xpress Technology** – One of the popular performance-enhancing WiFi technologies, designed to improve wireless network efficiency and boost throughput. It is more efficient in mixed environments, and it can work with 802.11a/b/g networks.

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Please do not send any products to the Indianapolis address listed in this manual or on the carton. This will only add delays in service for your product.

### **Thomson Inc.**

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Indianapolis, IN 46290

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TOCOM 1691104A



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