

Terayon DOCSIS Modem Installation Guide

Model:

ECM 615



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Installation Guide

READ ME FIRST!

Congratulations

Congratulations on your purchase of a Terayon DOCSIS Cable Modem. The Terayon ECM 615 DOCSIS Cable Modem is the perfect choice for connecting your personal computer to a fast broadband internet connection.

Getting Started

This installation guide is designed for anyone who wants all the “how-to” information about installing the Terayon ECM 615 Data-Over-Cable Interface Specification (DOCSIS) Cable Modem. You have probably heard of online help. Well, think of this installation guide as *onside* help. For best results, read each procedure beforehand — reviewing each procedure may answer some questions that could come up during the installation process. So let’s get started.

Package Contents

Please take a moment to unpack your modem and familiarize yourself with the all cables and components included in the box. Use the list below and Figure 1 to verify the contents of the box.

Terayon ECM 615 Cable Modem Package Contents

- Terayon Model ECM 615 DOCSIS Cable Modem
- Modem Stand
- Cable Modem Power Adaptor
- RJ-45 Ethernet Cable
- Universal Serial Bus (USB) Cable
- CD-ROM with USB Drivers

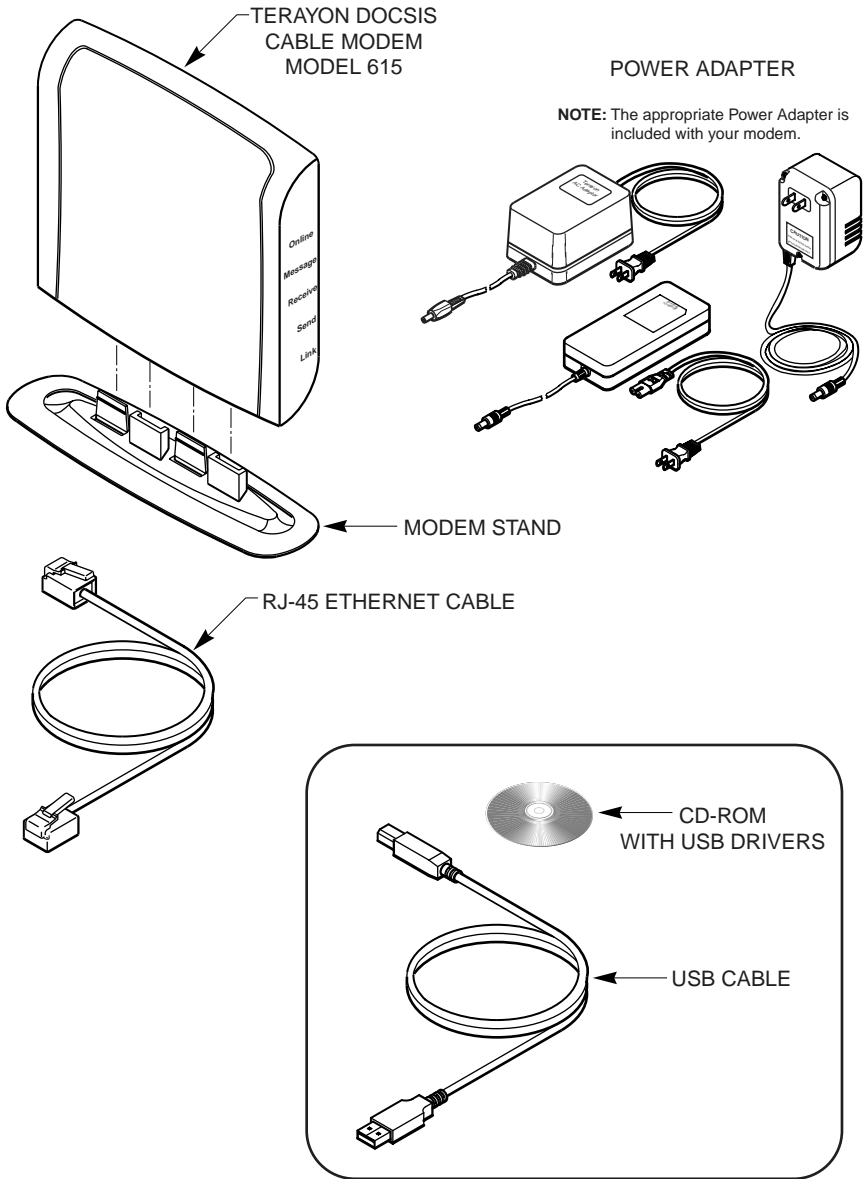


Figure 1 Contents of Cable Modem Box

System Requirements

Before you begin installing your new Terayon cable modem, make sure your computer system has the following hardware and software.

Hardware/Software	IBM PC or Compatible	Apple/Macintosh
CPU	Pentium class microprocessor or equivalent	Power PC 601 or later; iMac®
Memory (RAM)	32 MB	24 MB
Available Disk Space	50 MB	50 MB
Operating System	Windows® 95, 98, 2000, ME, Windows NT® 4.0 Workstation	OS 7.5.1 or later
Network Connectivity	Must have (any one): <ul style="list-style-type: none"> • USB Port • 10 Base-T Ethernet Card • PCMCIA Ethernet Card (laptop) 	Must have (any one): <ul style="list-style-type: none"> • USB Port • 10 Base-T Ethernet Card • PCMCIA Card (laptop)

IMPORTANT: *Computers using Windows 95, NT 4.0, or a Macintosh operating system must use an ethernet port to connect to the ECM 615 Modem.*



Installation Overview

As you follow the self-installation process, you may be asked to perform some tasks you have not previously attempted. You will be guided through the following steps:

- Connecting the CATV Coaxial Cable to the Modem
- Connecting the Power Adaptor to the Modem
- Connecting the Modem to your Computer
- Starting the Modem.

What You Will Need

The following is a list of items you will need to install your new Terayon cable modem:

- This installation guide
- Your computer user manual
- The cable modem

INSTALLING THE MODEM

Connecting the Modem

To install your new cable modem, you will need the following items:

- Two coaxial cables of a length appropriate to your installation
- One cable line splitter
- A 7/16 inch wrench or spanner.

When installing your new cable modem a cable splitter and two new cables are required. The cable splitter divides the incoming signal from the cable company into two signals, one for the household TVs, and one for the cable modem. No TV sets are allowed on the cable that connects to the cable modem. Figure 2 illustrates a typical cable modem installation.

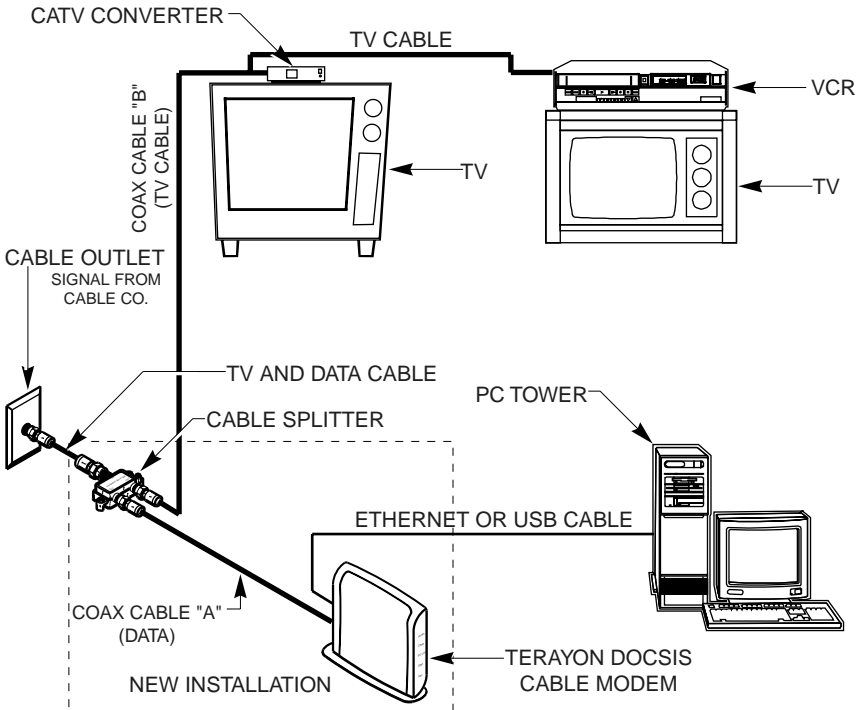


Figure 2 Typical Cable Modem Installation

Modem Connectors

Before you begin installing your new cable modem, take a moment to familiarize yourself with the modem connectors identified in Figure 3. An explanation of each connector follows the illustration.

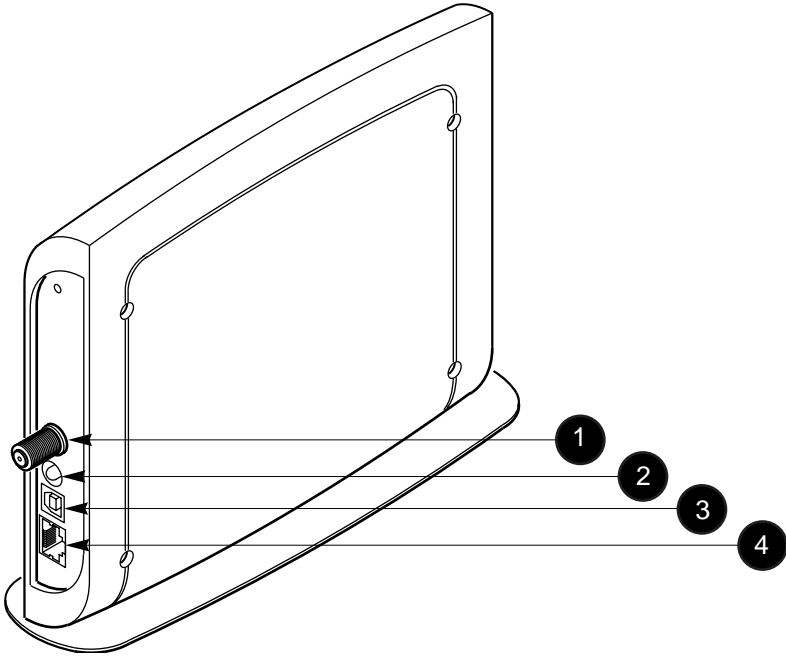


Figure 3 Modem Connectors

- | | |
|--------------------------------|--|
| 1 - RF Cable Connector | Connects the modem to the incoming signal from the cable company via a cable splitter. |
| 2 - DC Power Input-jack | Connects the modem to the Modem Power Adaptor. |
| 3 - USB Serial Port | Connects the modem to the USB port on your computer. |
| 4 - RJ-45 Ethernet Port | Connects the modem to the Ethernet port on your computer NIC card. |

Connecting the CATV Coaxial Cable to the Modem

In order for your cable modem and your computer to access the Internet, you need to connect the coaxial cable that comes from your cable outlet to the modem. This is typically done using a cable splitter. See Figure 2 on page 4.

To connect your modem to the CATV coaxial cable, follow these steps:

1. Locate the CATV coaxial cable connected to the cable outlet.
You can find it in one of three ways:
 - It may be connected to a TV, Converter Box, or a VCR.
 - It may be connected to a wall mounted outlet.
 - It may be coming out from under a baseboard or some other location.
2. When you locate the CATV coaxial cable, disconnect it from the TV, Converter Box, or VCR.
You may need to use a wrench to disconnect the cable.
3. Locate the cable splitter, then using Figure 2 and Figure 4 as guides, connect the CATV coax cable you disconnected in step 2 to the IN connector on the cable splitter. Tighten the connector with a 7/16 inch wrench.

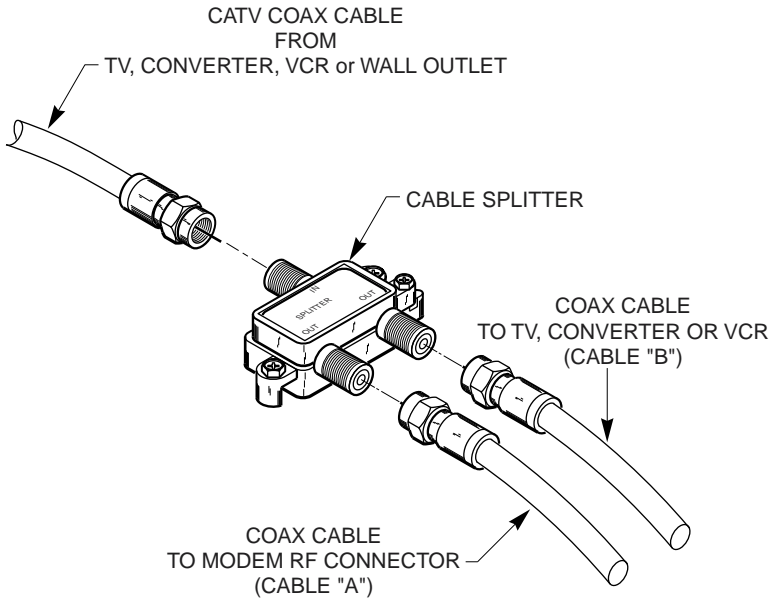


Figure 4 Connecting Coax Cables to Cable Splitter

4. Using Figure 2 and Figure 4 as guides, connect one end of a coax cable (Cable “B”) to one of the OUT connectors on the cable splitter. Tighten the connector with 7/16 inch wrench.
5. Connect the remaining end of Cable “B” (TV Cable) to the same TV, Converter Box, or VCR.
6. Again, using Figure 2 and Figure 4 as guides, connect one end of coax Cable “A” (Data) to the remaining OUT connector on the cable splitter. Tighten the connection with a 7/16 inch wrench.
7. Remove your new cable modem from its box and place it near your computer.
8. Connect the remaining end of coax Cable “A” (Data) to the RF connector on the modem as shown in Figure 5. Tighten the connection with a 7/16 wrench.

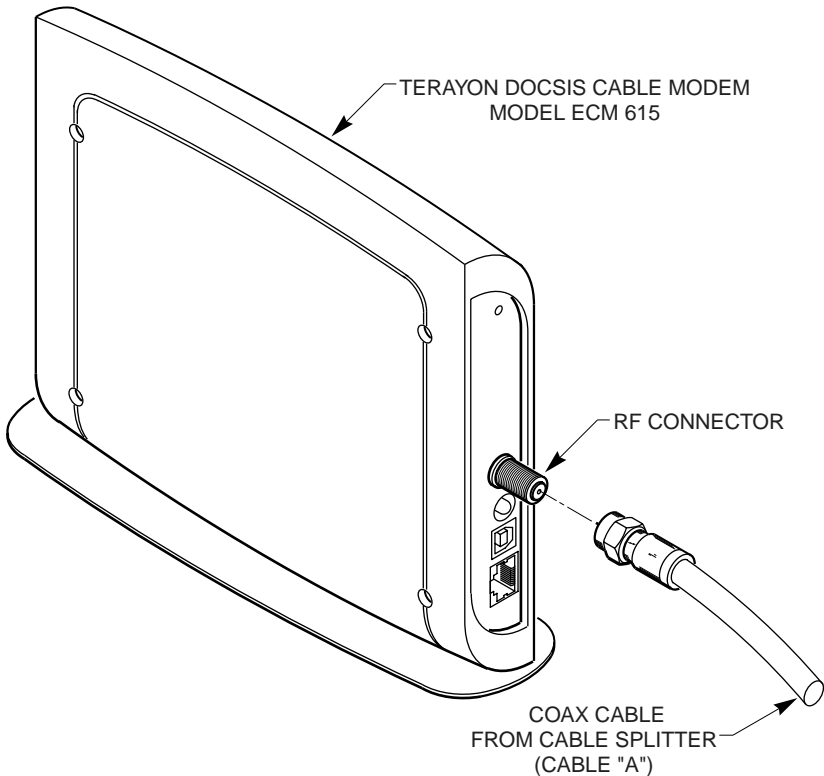


Figure 5 Connecting the RF Cable to the Modem

Connecting the Power Adapter to the Modem

Power for your cable modem is generated by the Power Adapter unit that comes with the modem. The Power Adapter and power cord shipped with your ECM 615 modem is one of the adapters shown in Figure 6, in compliance with the requirements of your country.

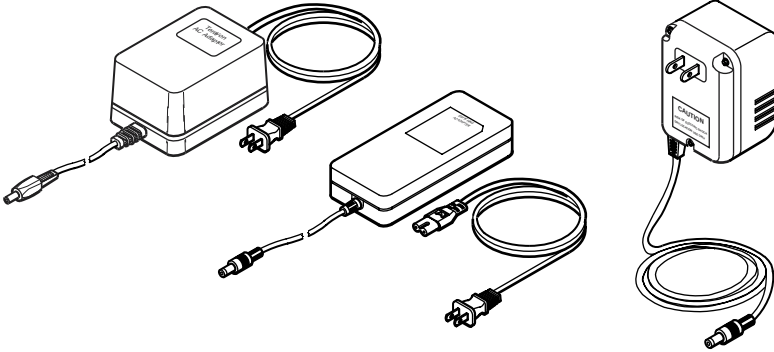


Figure 6 Power Adapters

To connect the Power Adapter to the modem, do the following:

1. Remove the modem Power Adapter from the modem cable box.
2. Using Figure 7 as a guide, insert the Power Adapter output connector into the DC Power input jack on the back of the modem.

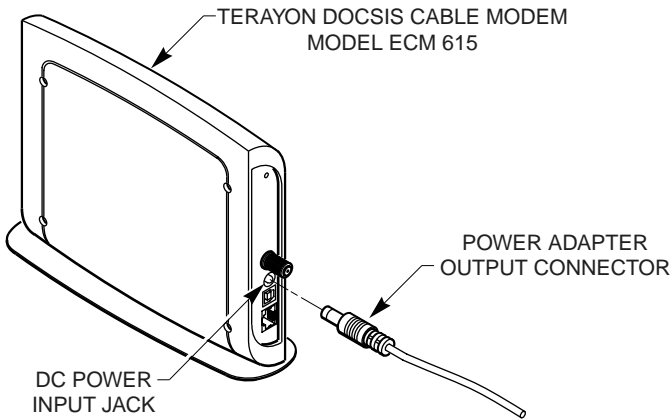


Figure 7 Connecting the Power Adapter to the Modem



IMPORTANT: Do not connect the adaptor to an AC outlet at this time.

Connecting the Modem to your PC

In order for your computer to communicate with your new modem and the Internet, it must be equipped with a network interface. Today's computers are typically equipped with either a 10 Base-T Ethernet port or a Universal Serial Bus (USB) port. The Model ECM 615 modem comes equipped with RJ-45 Ethernet and USB connectors, allowing the modem to connect to either an Ethernet port or a USB serial port. To connect your new modem to your PC, do the following:

1. Before you begin connecting the modem to your PC, look in your computer user manual or look at the back of your PC to see what kind of network interface your PC is equipped with.



IMPORTANT: *If you do not have a network interface installed in your computer, you will need to purchase one from a retailer or your local cable company, and install it according to manufacturer instructions.*

2. If your PC is equipped with a 10 Base-T Ethernet card, proceed to “Connecting the 10 Base-T Ethernet Cable” on page 10. If your PC is equipped with a USB Serial Port, proceed to “Connecting the USB Cable” on page 12.



IMPORTANT: *Do not connect the modem to both the PC Ethernet and the USB port. Use either the USB or the Ethernet port, not both. Note that the Ethernet connection is preferable to the USB connection if both are available. The Ethernet connection is the fastest speed connection and will not be shared with other devices.*

Connecting the 10 Base-T Ethernet Cable

To connect the 10 Base-T Ethernet cable, follow these steps:

1. Retrieve the 10 Base-T Ethernet cable from the box the modem came in. Use Figure 1 on page 2 to identify the cable.
2. Using Figure 8 as a guide, connect one end of the 10 Base-T Ethernet cable to the RJ-45 Ethernet port on the back of the modem.

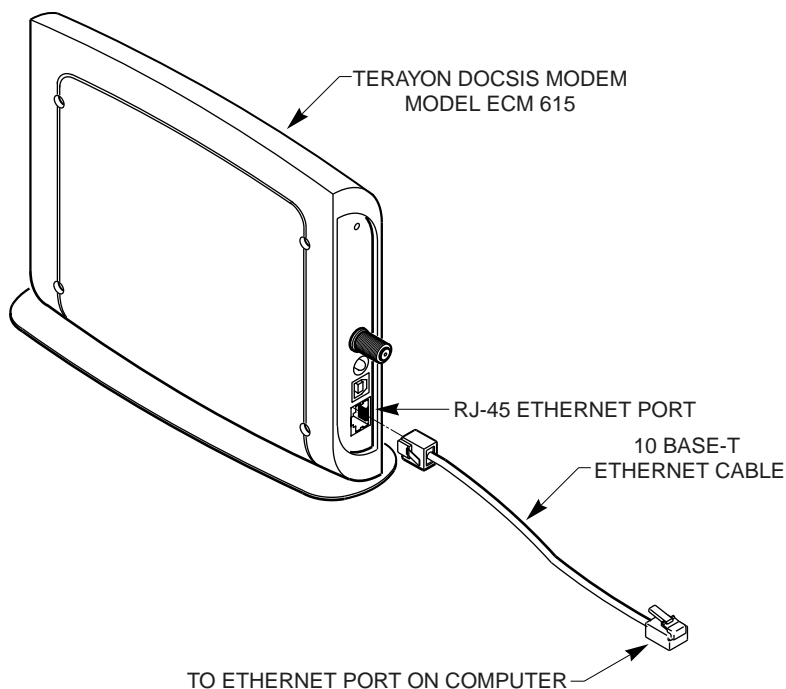


Figure 8 Connecting the Ethernet Cable to the Modem

3. Connect the remaining end of the 10 Base-T Ethernet cable into the RJ-45 Ethernet port on the Ethernet Interface Card as shown in Figure 9.



IMPORTANT: For proper operation with a 10 Base-T Ethernet Interface card (NIC), the communication mode between the NIC card and the ECM 615 Modem must be set to **Half-Duplex** Mode.

4. Proceed to “Starting the Modem” on page 14.

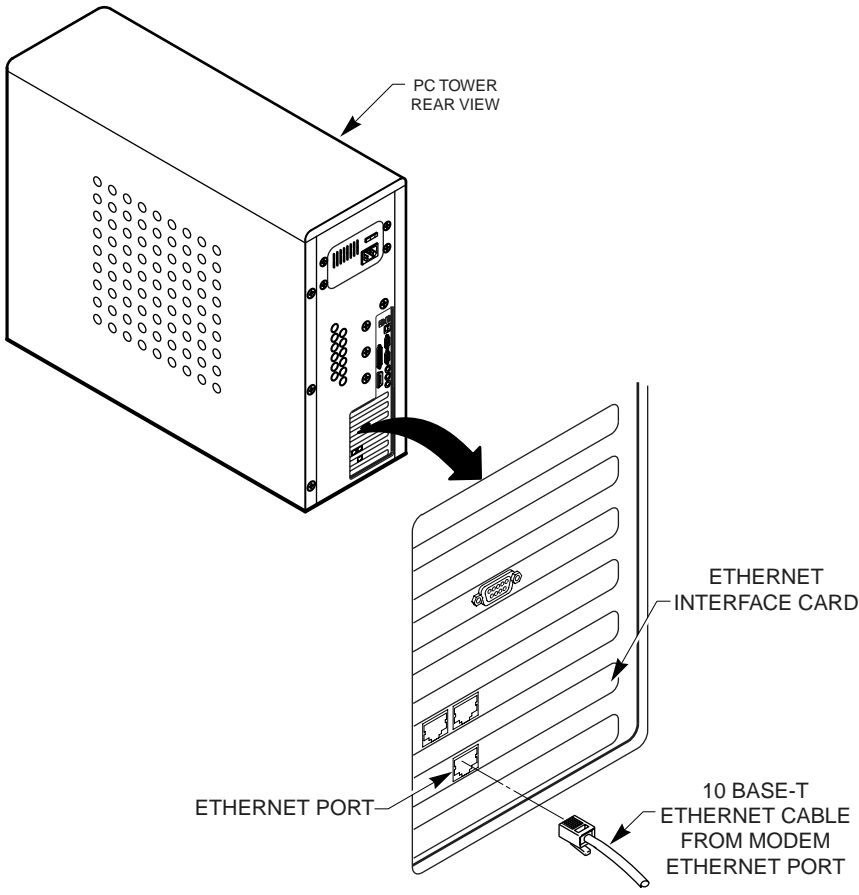


Figure 9 Ethernet Cable to Ethernet Card Connection

NOTE

***NOTE:** Your computer may be a desktop model or a tower model and may look different than the illustration shown in Figure 9.*

Connecting the USB Cable

In order for your computer USB Interface to pass data back and forth to the Terayon ECM 615 Modem, you must connect a USB cable to the modem USB port and the USB port on the back of the computer.

To connect the USB cable, follow these steps:

1. Retrieve the USB cable from the box the modem came in.
Use Figure 1 on page 2 to identify the cable. Notice that the USB cable has two types of connectors, an “A” type, and a “B” type. Figure 10 identifies the connector types.

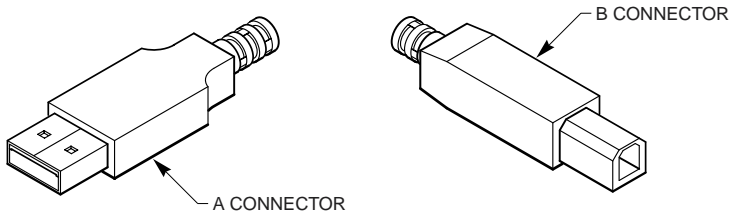


Figure 10 USB Cable Connectors

2. Using Figure 11 as a guide, insert the USB cable “B” connector into the USB Serial port on the back of the Model ECM 615 modem.

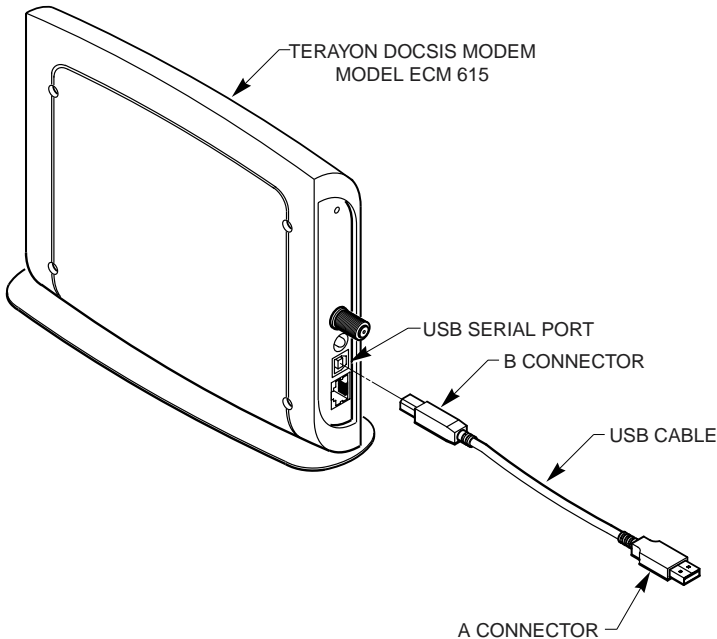
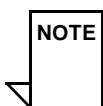


Figure 11 Connecting the USB Cable

3. Insert the USB cable “A” connector into the computer USB Serial port on the back of your computer as shown in Figure 12.



NOTE: *Your computer may be a desktop model or a tower model and may look different than the illustration shown in Figure 12.*

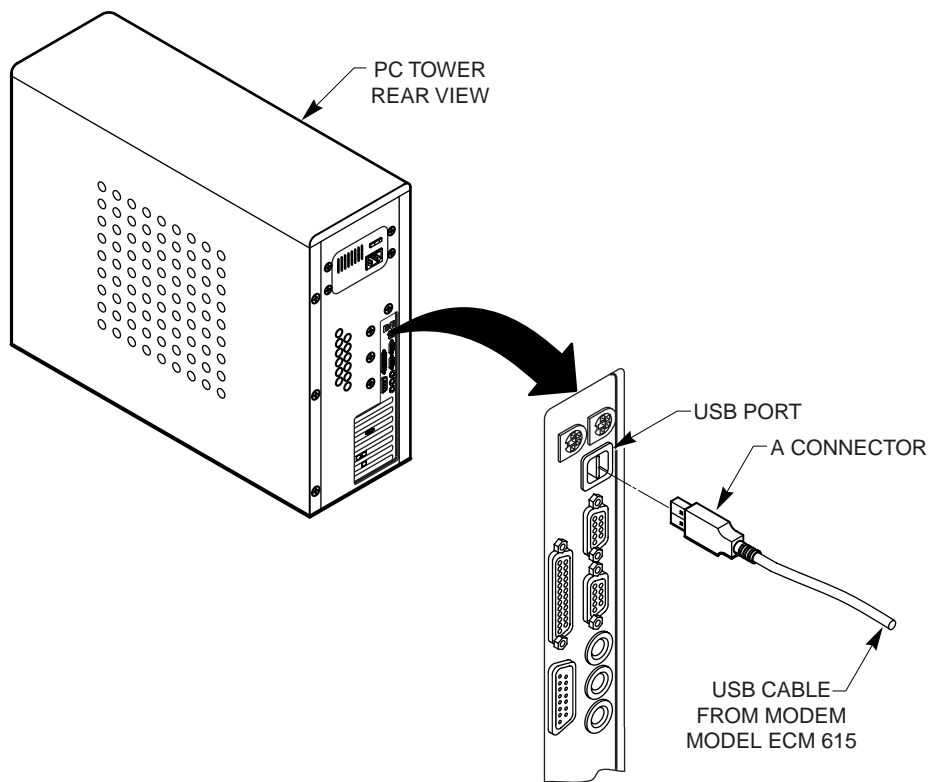


Figure 12 USB Cable to Computer USB Port Connection

4. Proceed to “Starting the Modem” on page 14.

Starting the Modem

To start operating your new Terayon cable modem, do the following:

1. Plug the Power Adaptor into an appropriate AC power outlet.



NOTE: *If you have connected the Terayon ECM 615 modem to your computer using a USB port, your computer will prompt you to load a USB driver as soon as you apply power to the modem. Insert the USB Drivers CD that came with the modem into your CD-ROM drive and follow the online instructions. You may have to tell the computer what drive your CD-ROM drive is.*

Once your Terayon cable modem is properly connected and the Power Adapter is connected to an AC power outlet, it will automatically boot-up and start scanning for the active cable modem channel from your cable company server.



IMPORTANT: *When you power up the Terayon DOCSIS cable modem for the first time, it can take up to 10 minutes for the modem to complete its boot-up and scanning sequence. Do not turn modem power off during the boot-up and scanning sequence, unless your cable operator instructs you to do so.*

2. Verify the Online and Link LED indicators on the modem front panel are ON. If the Online and Link LEDs are ON and not blinking, you have successfully installed your new Terayon cable modem. If the Online and Link LEDs are not ON or are blinking, see “Troubleshooting” on page 18.

Reading Your Modem Lights

The indicator LEDs on the front panel of the Terayon cable modem tell you what's happening during a communications session. The table below tells you what each LED indicator means.

Online	Message	Receive	Send	Link	Modem Status
ON	ON	ON	ON	ON	Modem reset (Displays briefly)
Blink	OFF	OFF	OFF	OFF	Self-Test: No error.
Blink	Blink	OFF	OFF	OFF	Self-Test failed: Memory problem.
Blink	OFF	OFF	Blink	OFF	Self-Test failed: No valid application image found.
Blink	Blink	OFF	Blink	OFF	Self-Test failed: Error during firmware download.
Blink	ON	ON	ON	OFF	Self-Test failed: Invalid modem identity.
Blink	X	X	X	Blink	Scanning for valid downstream channel.
Blink	X	X	X	ON	Scanning for valid upstream channel.
Blink	Blink	OFF	OFF	X	No more valid upstream for this downstream.
Blink	ON	OFF	OFF	X	Initial maintenance time-out (T2) during scan.
Blink	ON	OFF	ON	X	Station maintenance time-out (T4) during scan.
Blink	OFF	ON	OFF	ON	Failed DHCP (Displays briefly).
Blink	ON	ON	OFF	ON	Failed TFTP config file (Displays briefly).
Blink	OFF	ON	ON	ON	Modem failed registration (Displays briefly).
Blink	Blink	Blink	Blink	ON	Modem performing time of day protocol.
ON	X	X	X	X	Modem is operational.
ON	X	X	X	X	Modem Ethernet or USB port connected.
ON	X	Blink	X	ON	Modem receiving data on Ethernet or USB port.
ON	X	X	Blink	X	Modem transmitting data to CATV cable.
ON	ON	X	X	X	Message pending (controlled by cable company).

“X” = Don't Care

FREQUENTLY ASKED QUESTIONS

FAQs

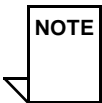
Q. *Can I have more than one computer attached to a Terayon modem?*

A. Yes, Terayon cable modems do provide this capability, but you will need to install a hub into your system and you must arrange for this service with your cable service provider. Some service providers limit the number of computers connected to the modem.

Q. *Can I connect the Terayon cable modem to a hub or switch?*

A. Yes, you can connect the Terayon cable modem to a hub or switch. There are two ways to successfully complete a physical connection.

1. Buy a cross-over cable and connect the port labeled 10Base-T on the Terayon cable modem to one of the ports on the hub or switch.
2. Many newer hubs and switches have an “uplink” port specifically designed for cascading. Connect this uplink port to your Terayon cable modem and it should work without a cross-over cable. Connect your PC to another available port.



NOTE: *While you may be able to successfully complete a physical connection to a hub or switch indicated by a green Online LED, you cannot obtain additional IP addresses unless your subscription allows for more than one IP address. Contact your cable operator for more information.*

-
- Q. *Can I download new modem software drivers or do something to optimize the modem configuration in order to improve my performance?***
- A.** No, modem configuration and downloading of software drivers can only take place over the cable TV cable and are provided by the cable operator.
- But, improving the performance of your cable modem does not give the cable operators access to your computer so your personal privacy and security are not affected.
- Q. *If I don't subscribe to cable TV, can I still get a cable modem Internet connection?***
- A.** Yes, but this is a question for your cable service provider or Broadband Service Provider (BSP) and depends on their policies.
- Q. *The product specifications define varying data rates, why don't I see those?***
- A.** The cable operator has the flexibility to set different performance levels to differentiate between different types of subscribers. In general, individual residential subscribers will not be allocated the entire channel bandwidth.
- Q. *Can I watch TV and surf the Internet at the same time?***
- A.** Yes, neither television or data signals are affected by simultaneous use.

TROUBLESHOOTING

Troubleshooting

Problem:

I cannot access my E-mail or Internet Service.

Possible solution:

Check all connections. Make sure the cable line is securely connected to the cable jack on the back of the modem. Verify the Ethernet or USB cable is securely plugged into both the modem and your network interface card or USB network interface. Make sure your Power Adaptor is properly plugged into both the modem and a wall outlet or surge protector. If your cable modem is properly connected, the Online and Link indicator lights on the modem front panel should be a solid color.

If the Online and Link indicator lights (LEDs) are solid green (not blinking), your cable modem is operating properly. Try shutting down and powering off your computer and then turning it back on. This will cause your computer to re-establish communications with your cable company server.

1. If you are using the cable line splitter, try bypassing the splitter by disconnecting it and running a single coaxial cable between the cable modem and your cable wall jack. Try reconnecting after making this change. If reconnecting is successful, you may have a bad splitter.
2. Your network interface card may be malfunctioning. Refer to the Manufacturer's documentation for troubleshooting information.
3. Call your cable company to verify their service is two-way. This modem is designed for use with two-way cable plants. Verify your account is activated.

Problem:

The Online LED never stops blinking.

Possible Solution:

The signal from your cable company equipment may be too weak or the cable line may not be properly attached to the modem. If the cable line is properly connected to the modem, call your cable company to verify whether or not a weak signal may be the problem.

Problem:

The power on my modem goes on and off sporadically. The Online light never stops blinking.

Possible Solution:

You may be using the wrong power supply. Check that the power supply you are using is the one that came with your cable modem. If you cannot connect to the Internet at all, use this checklist to help identify possible problems:

- Make sure your computer and monitor are turned on.
- Make sure all power plugs are completely inserted into their sockets. Your computer and cable modem should be plugged into grounded outlets.
- If you are using a power strip, make sure it is turned on.
- Make sure all data cables are firmly connected at both ends.
- If you still do not have a connection, call your cable service to confirm they have properly set you up for service. If so instructed, reset your modem.

TECHNICAL SUPPORT

Technical Support and General Inquires

Welcome to Terayon DOCSIS Cable Modem Support. Terayon provides service and support in the following ways:

E-mail Support

Terayon_support@terayon.com

Find Terayon Support on the Terayon Web Site

Visit our web site at:

<http://www.terayon.com/support>

Talk to a Technical Support Agent

To speak directly with a support agent who specialized in Terayon DOCSIS cable modem information, call this toll-free number: 1-888-859-3242. Hours of operation are Monday through Friday 8:00AM - 5:00 PM, Pacific Time.

Return Policy

Terayon will only accept a package with a valid Return Authorization Number. Please contact your Terayon Technical Support representative. If the support representative determines that you need to return the modem, you will receive a Return Authorization Number and shipping instructions.

Product Registration

When you register your Terayon DOCSIS cable modem, you are eligible to receive technical support, to track your proof of ownership, and to stay informed about upgrades and special offers. Be sure to fill out your registration information on the Terayon web site.

http://www.terayon.com/support/cablemodem/terayon/tj_register.html

WARRANTY

Warranty

Terayon warrants that for a period of one (1) year from the date of purchase from Terayon or an authorized reseller the product will be free from defects in material and workmanship under normal use. If this product is not in good working order as warranted, the sole and exclusive remedy shall be, at Terayon's option and expense, to repair the defective product or to provide an equivalent replacement product. All products that are replaced will become the property of Terayon. Replacement products may be new or products reconditioned to a like-new condition.

Restrictions - This warranty does not apply if the product (a) has been altered, except by Terayon, (b) has not been installed, operated, repaired, or maintained in accordance with instructions supplied by Terayon, (c) has been subjected to abnormal physical or electrical stress, misuse, negligence, or accident, or (d) used in ultra hazardous activities.

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