CONVERGENCE ENABLED

Touchstone CM3200 Cable Modem

User Guide

Release STANDARD 1.6   September 2015

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Patent Notice

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Getting Started

The ARRIS Touchstone CM3200 DOCSIS® 3.0 Cable Modem provides high-speed access to the Internet and other online services on your home network. You can use your CM3200 to directly connect a computer to your home or small business LAN through an Ethernet connection.

This guide provides a product overview and instructions for installing and configuring your CM3200 Cable Modem to get it up and running on your home network.

What's in the Box?

Make sure you have the following items before proceeding. Call your service provider for assistance if anything is missing.

- Cable Modem

- Power Adapter
- Ethernet Cable
- End User License Agreement

Additional Item(s) You May Need (Not Included)

The following item is not included in the box and must be purchased separately:

- Coaxial (coax) cable, if one is not already connected to a cable wall outlet

System Requirements

- High-speed Internet access account
- Web browser access – Internet Explorer, Google Chrome, Firefox, or Safari
- Compatible operating systems:
  - Windows® 10
  - Windows 8
  - Windows 7 Service Pack 1 (SP1)
  - Windows Vista™ SP2 or later
  - Windows XP SP3

    Note: Microsoft no longer supports Windows XP. The CM3200 should still function without any problems.

  - Mac® 10.4 or higher
  - UNIX®
  - Linux®

Important Safety Instructions

Read This Before You Begin — When using your equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons, including the following:

- Read all of the instructions listed here and/or in the user manual before you operate this device. Give particular attention to all safety precautions. Retain the instructions for future reference.

- This device must be installed and used in strict accordance with manufacturer's instructions, as described in the user documentation that is included with the device.

- Comply with all warning and caution statements in the instructions. Observe all warning and caution symbols that are affixed to this device.

- To prevent fire or shock hazard, do not expose this device to rain or moisture. The device must not be exposed to dripping or splashing. Do not place objects filled with liquids, such as vases, on the device.

- This device was qualified under test conditions that included the use of the supplied cables between system components. To ensure regulatory and safety compliance, use only the provided power and interface cables and install them properly.

- Different types of cord sets may be used for connections to the main POWER supply circuit. Use only a main line cord that complies with all applicable device safety requirements of the country of use.

- Installation of this device must be in accordance with national wiring codes and conform to local regulations.

- Operate this device only from the type of power source indicated on the device's marking label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company.

- Do not overload outlets or extension cords, as this can result in a risk of fire or electric shock. Overloaded AC outlets, extension cords, frayed power cords, damaged or cracked wire insulation, and broken plugs are dangerous. They may result in a shock or fire hazard.

- Route power supply cords so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords where they are attached to plugs and convenience receptacles, and examine the point where they exit from the device.

- Place this device in a location that is close enough to an electrical outlet to accommodate the length of the power cord.

- Place the device to allow for easy access when disconnecting the power cord of the device from the AC wall outlet.

- Do not connect the plug into an extension cord, receptacle, or other outlet unless the plug can be fully inserted with no part of the blades exposed.

- Place this device on a stable surface.

- Avoid damaging the device with static by touching the coaxial cable when it is attached to the earth-grounded coaxial cable-TV wall outlet.

- Always first touch the coaxial cable connector on the device when disconnecting or reconnecting the Ethernet cable from the device or user's PC.

- It is recommended that the customer install an AC surge protector in the AC outlet to which this device is connected. This is to avoid damaging the device by local lightning strikes and other electrical surges.

- Postpone installation until there is no risk of thunderstorm or lightning activity in the area.

- Do not use this product near water: for example, near a bathtub, washbowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool.

- Do not cover the device or block the airflow to the device with any other objects. Keep the device away from excessive heat and humidity and keep the device free from vibration and dust.

- Wipe the device with a clean, dry cloth. Never use cleaning fluid or similar chemicals. Do not spray cleaners directly on the device or use forced air to remove dust.

- For added protection, unplug the device from the wall outlet and disconnect the cables to avoid damage to this device due to lightning and power surges.

- Upon completion of any service or repairs to this device, ask the service technician to perform safety checks to determine that the device is in safe operating condition.

- Do not open the device. Do not perform any servicing other than that contained in the installation and troubleshooting instructions. Refer all servicing to qualified service personnel.

- This device should not be used in an environment that exceeds 40º C (104º F).

SAVE THE ABOVE INSTRUCTIONS

Note to CATV System Installer — This reminder is provided to call the CATV system installer's attention to Article 820.93 and 820.100 of the National Electric Code, which provides guidelines for proper grounding and, in particular, specifies that the Coaxial cable shield shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

FCC STATEMENTS

FCC Interference Statement

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 environment. 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 device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

■ Reorient or relocate the receiving antenna.

■ Increase the separation between the device and receiver.

■ Connect the 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.

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.

FCC CAUTION: Any changes or modifications not expressly approved by ARRIS for compliance could void the user's authority to operate the equipment.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. To comply with the FCC RF exposure compliance requirements, the separation distance between the antenna and any person's body (including hands, wrists, feet and ankles) must be at least 21 cm (8 inches).

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter except those already approved in this filing.

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destinations. The firmware setting is not accessible by the end user.

FCC DECLARATION OF CONFORMITY

ARRIS Enterprises, Inc. 3871 Lakefield Drive, Suwanee, GA 30024, 1-215-323-1000, declares that the Touchstone CM3200 Cable Modem complies with 47 CFR Parts 2 and 15 of the FCC rules as a Class B digital device.

INDUSTRY CANADA (IC) STATEMENT

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions:

■ This device may not cause interference, and

■ This device must accept any interference, including interference that may cause undesired operation of the device.

CAN ICES-3 (B)/NMB-3 (B)

IC Radiation Exposure Statement

Important Note: This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

Avis D'Industrie Canada (IC)

Cet appareil est conforme à la réglementation RSS-210 d'Industrie Canada. Son utilisation est assujettie aux deux conditions suivantes :

■ Cet appareil ne doit pas causer d'interférences et

■ Cet appareil doit accepter toute interférence reçue, y compris les interférences causant un fonctionnement non désiré.

DÉCLARATION DE IC SUR L'EXPOSITION AUX RAYONNEMENTS

Note Importante : cet équipement est conforme aux limites d'exposition aux rayonnements établies par IC pour un environnement non contrôlé. Cet équipement doit être installé et utilisé de manière à maintenir une distance d'au moins 20 cm entre la source de rayonnement et votre corps.

CARING FOR THE ENVIRONMENT BY RECYCLING
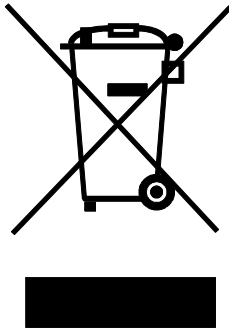
When you see this symbol on an ARRIS product, do not dispose of the product with residential or commercial waste.

Recycling your ARRIS Equipment

Please do not dispose of this product with your residential or commercial waste. Some countries or regions, such as the European Union, have set up systems to collect and recycle electrical and electronic waste items. Contact your local authorities for information about practices established for your region.

Product Overview

Front Panel

The front of the Cable Modem has the following indicators:
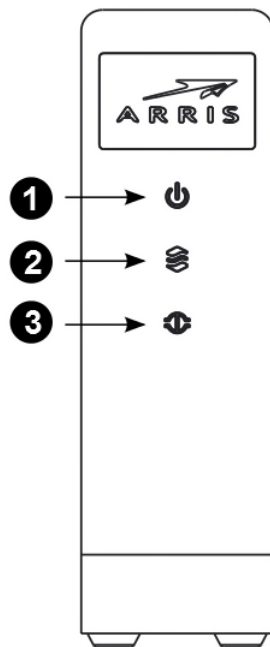
1. **Power:** indicates whether AC power is available to the unit.
2. **US/DS:** indicates upstream/downstream connectivity.
3. **Online:** indicates Internet data transmission status.

Rear Panel

The rear of the Cable Modem has the following connectors and controls:
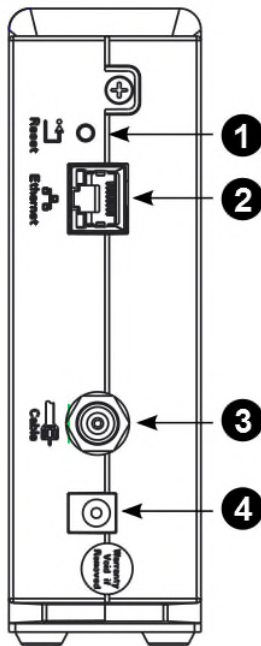
1. **Reset button:** resets the Cable Modem as if you power cycled the unit. Use a pointed non-metallic object to press this button.

   Note: If you hold the Reset button for more than 15 seconds, the Cable Modem will be reset to the factory default settings and will reboot.

2. **Ethernet:** connector for use with a computer LAN port.
3. **Cable:** connector for the coaxial cable.
4. **Power:** connector for the power cord.

Modem Label

The cable modem label is located on the bottom of the CM3200. It contains specific cable modem ID information that you may need when contacting your service provider or ARRIS Technical Support.
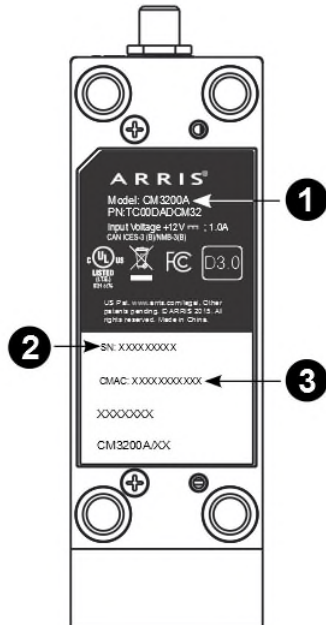
To receive Internet service, you may have to contact your service provider for assistance. You may need to provide the following information listed on the cable modem label:

1. Cable Modem model name (CM3200)

2. Cable Modem serial number (S/N)

3. Cable Modem MAC address (CMAC)

Installing the Modem

![warning icon] **WARNING:** This product is for indoor use only. Do not route the Ethernet cable(s) outside of the building. Exposure of the cables to lightning could create a safety hazard and damage the product.
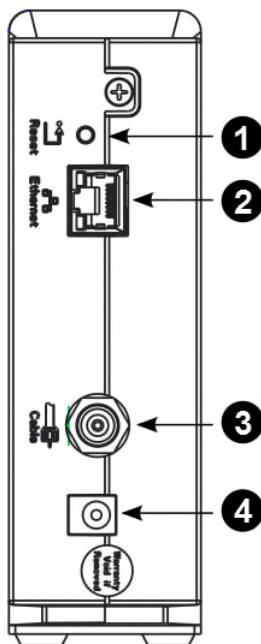
Connecting the Cable Modem

1. Connect one end of the coax cable to the cable outlet or splitter, and the other end to the Cable Modem's Cable connector (**3**). Tighten the connections by hand, then tighten an additional 1/8 turn with a wrench.

![info icon] **Note:** For best performance, use high-quality coax cable and minimize or eliminate splitters between the cable jack and the Cable Modem.

2. Insert the plug from the power cord into the Power connector on the back of the Cable Modem (**4**) and insert the power cord into a convenient AC outlet.

    The Power light on the front of the Cable Modem lights up, then flashes once (refer to the LED tables shown in Using the Cable Modem). See Troubleshooting if the Power light does not turn on.

3. Connect one end of the Ethernet cable to any Ethernet port on the back of the Cable Modem, (**2**) and the other end to the Ethernet port on a computer, hub, or broadband router.

Note: If you are connecting to a computer, use the Ethernet cable included in the Cable Modem package.

Establish an Internet Connection

Although your computer may already be configured to automatically access the Internet, you should still perform the following cable modem connectivity test to verify that your network devices were connected properly.

1. Power ON the computer connected to your CM3200 if it is turned off, and then log in.
2. Contact your service provider to activate (provision) your CM3200. You may have to provide the HFC MAC ID listed on the *modem label* (page 12).

Note: Your service provider may allow for automatic activation which will automatically launch its own special website when you open a web browser.

3. After the CM3200 is activated, open a web browser (Internet Explorer, Google Chrome, Firefox, or Safari) on your computer.

   If the special website did not open, continue with step 4. If it did open, proceed to step 5.
4. Type a valid URL in the address bar and then press **Enter**.

   The ARRIS website should open. If it did not open, please contact your service provider for assistance.
5. Check that the front panel LEDs on the CM3200 light up in sequential order. See *Front Panel* (page 10) for additional LED status information.

   ● If all four LEDs did not light up solid and you also do not have an Internet connection, you may have to contact your service provider to reactivate the CM3200 or check for signal issues.
   ● If you still cannot connect to the Internet, your CM3200 may be defective. Contact Technical Support for assistance.

Troubleshooting Tips

If the solutions listed in this section do not solve your problem, contact your service provider for assistance.

Your service provider may ask for the status of the LEDs as described in Front Panel LED Icons and Error Conditions.

You may have to reset the CM3200 gateway configuration to its original factory settings if the gateway is not functioning properly.

Solutions

Table 1.   Troubleshooting Solutions

Modem Problem	Possible Solution
POWER LED Icon is OFF	■ Check the power connection on the modem and to the electrical outlet. ■ Check that the electrical outlet is working. ■ Is the outlet controlled by a light switch? If so, disconnect the modem power cord and connect it to another electrical outlet that is not controlled by a light switch.
Cannot Send or Receive Data	■ Check each end of the coaxial cable connection on the modem and cable outlet. Hand tighten each connector, if necessary. ■ Check the Ethernet cable to make sure it is properly connected to the modem and computer. ■ On the front panel, check the status of the LED icons and refer to Front Panel LED Icons and Error Conditions to identify the problem. ■ If you have cable television service, check your television to ensure your cable service is operating properly. ■ If none of the above solutions resolves the problem, contact your service provider for assistance.
Cannot Access the Internet	■ Check that all cable and power connections on your modem and computer are properly connected. ■ Check that the Power and Online LED icons on the front panel are lit up solid. ■ Contact your service provider for assistance.

Front Panel LED Icons and Error Conditions

The CM3200 front panel LED icons provide status information for the following error conditions:

Table 2. **Front Panel LED Icons and Error Conditions**

LED Icon	Status	If, During Startup:	If, During Normal Operation:
Power	Off	Modem is not properly plugged into the electrical outlet	Modem is unplugged
US/DS	Blinking	Upstream or downstream receive channel cannot be acquired	Upstream or downstream channel is lost
Online	Blinking	IP registration is unsuccessful	IP registration is lost

ARRIS Contacts

For technical support, please contact your Service Provider first.
For Service Providers with a valid Support Contract ID:
Technical Services

For technical support on ARRIS products you can contact us by phone or on the web.

By Telephone   The Technical Assistance Center can be reached at:

1-888-944-HELP (4357)

On the Web   The Ask ARRIS web site gives you web access to service and support tools. You will need to register using your support contract ID and email address. Ask ARRIS is located at:

http://www.arris.com/support

There you will be able to access:

- Support Contact Information for all products
- Knowledge Base Information (also known as Solutions)
- User Documentation
- Current open support cases
- Ability to create a new support case (for technical support or repair and return)
- Training Webcast

By Email   Email addresses for ARRIS products will be provided with your account at Ask ARRIS.

Technical Training

For more information about our Global Knowledge Services Department and the programs we offer, e-mail us at:

training@arris.com

Glossary

C

Category 5e (Cat5e)

A high-quality type of cable, used for gigabit Ethernet (1000BaseT) connections. When purchasing Ethernet cables, always look for Category 5e cable.

Coaxial cable (coax)

A thin wire, used to connect your television and Cable Modem to the cable TV system. You can buy coax from any electronics retailer and many discount stores.

CPE

Customer Premise Equipment. This is the equipment that is plugged in to the Cable Modem; typically a computer or hub.

Cross-over

An Ethernet cable used to connect two hubs (or a hub and a cable modem) together. Also, some Ethernet hubs may have built-in cross-over on one or more ports (which eliminates the need for a cross-over cable).

D

DHCP

Dynamic Host Configuration Protocol. An IP protocol used to provide an IP address and location of services (such as DNS and TFTP) needed by a device connecting to the network. DHCP allows the cable company to configure your computer's networking software for you.

DNS

Domain Name Service (Server). An IP service that associates a domain name (such as www.example.com) with an IP address.

DOCSIS

Data Over Cable System Interface Specification. The interoperability standards used for data communications equipment on an HFC network.

Downstream

In an HFC network, the direction from the head-end to the subscriber. Some older cable documentation may refer to this as the forward path.

E

EMTA

Embedded Multimedia Terminal Adapter. An MTA device that is integrated with a cable modem.

Ethernet

A standard method of connecting two or more computers into a Local Area Network (LAN).

EuroDOCSIS

The European version of DOCSIS.

Event

An informational message used for monitoring network status.

F

F-connector

The type of connector used on coax cable. There are two common types of F-connector, slip-on and screw-on. Use coax with screw-on connectors for connecting your Cable Modem.

Firewall

A hardware or software device that prevents unauthorized access to a private network from the Internet. The CM3200 provides a built-in firewall.

G

Gateway

The device, usually a router, that connects devices on a given IP subnet to other IP subnets.

H

Headend

The "central office" in an HFC network. The headend houses both video and data equipment. In larger cable networks, a "master" headend often feeds several "remote" headends to provide distributed services.

HTTP

HyperText Transfer Protocol.

Hub

A box with several Ethernet connectors. Ethernet hubs provide a common point of contact for all connected devices.

I

IP address

A number assigned to your computer by your cable company, used to identify your computer to other systems on the Internet.

ISDN

Integrated Services Digital Network. A digital telephony standard that provides communication speeds about twice as fast as standard dialup.

L

LAN

Local Area Network. A network that allows computers in a single location (such as a building) to communicate with one another.

LED

Light Emitting Diode. A semi-conductor diode that emits light when current is passed through it.

M

MAC address

A number that uniquely identifies any device connected to a network. Your cable company uses your Cable Modem's MAC address to authorize access to the Internet. The MAC address is printed on a label on the bottom of your Cable Modem.

P

Protocol

A set of rules and formats that determines the communication behavior of network entities at a given layer.

Proxy

A device or program that stands in between a server (for example, a web site) and a client (your browser), providing a way to relieve some of the burden from the server. For example, your cable company may have a web proxy that keeps copies of popular web pages; the proxy can send you those pages instead of fetching them directly from the web site, resulting in faster page loading and less network congestion.

R

RF

Abbreviation for Radio Frequency. Some literature refers to coax as "RF cable" and the connectors as "RF connectors."

RJ-45

A standard 8-conductor modular connector, commonly used on Ethernet cable. An RJ-45 connector looks like a wide RJ-11 (telephone) connector.

S

Splitter

A small box with three cable connectors: one input and two outputs. You may need a splitter if you have a TV already connected to the cable outlet that you want to use for your Cable Modem. You can buy a splitter from any electronics retailer and most discount stores.

Switched outlet

A power outlet that may be turned on and off using a wall switch. Usually intended for lamps. Avoid plugging your computer or Cable Modem into a switched outlet to avoid disruptions.

T

TCP/IP

Transmission Control Protocol/Internet Protocol. The protocols used to facilitate communications across one or more connected networks.

TDMA

Time Division Multiple Access. A method used by DOCSIS-compliant cable modems for sending upstream data with minimal interference.

U

Upstream

The path from a subscriber device to the headend. Some older cable documentation may refer to this as the return path or reverse path.

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