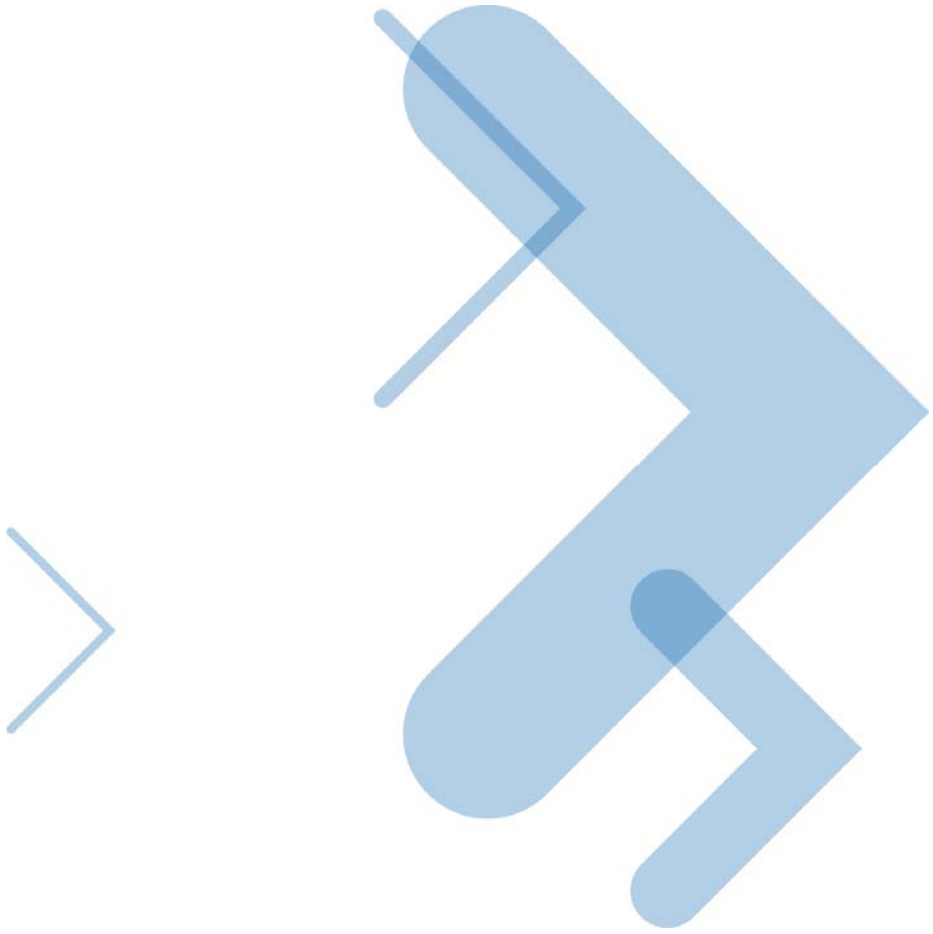
Motorola SURFboard®

SBV6120 DOCSIS 3.0 Digital Voice Modem

Installation Guide



Safety and Regulatory Information

IMPORTANT SAFETY INSTRUCTIONS

When using your telephone 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 systems 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 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 digital voice modem 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 digital voice modem when disconnecting or re-connecting the Ethernet cable from the digital voice modem 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.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning. For added protection for this device during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the cable system. This will prevent damage to the product due to lightning and power surges.
- 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.
- Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.
- Disconnect TNV circuit connector before removing the cover.
- Disconnect TNV circuit connector(s) before disconnecting power.
- Place this device to allow for easy access when disconnecting the power cord of the device from the AC wall outlet.
- Do not use the telephone to report a gas leak in the vicinity of the leak.
- **CAUTION**: To reduce the risk of fire, use only No. 26 AWG or larger UL listed or CSA certified telecommunication line cord, or national equivalent.
- 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.
- 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 50° C.

SAVE THESE INSTRUCTIONS

Note to CATV System Installer: This reminder is provided to call the CATV system installer's attention to Section 820.93 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.

CARING FOR THE ENVIRONMENT BY RECYCLING

When you see this symbol on a Motorola product, do not dispose of the product with residential or commercial waste.

Recycling your Motorola 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. If collection systems are not available, call Motorola Customer Service for assistance. Please visit www.motorola.com/recycle for instructions on recycling.

Important VoIP Service Information

Please contact your Internet Service Provider (ISP) and/or your local municipality for additional information on making emergency calls using VoIP service in your area.

When using this VoIP device, you CANNOT make any calls, including an emergency call, and E911 location services WILL NOT be available, under the following circumstances:

- Your broadband ISP connection goes down, is lost, or otherwise fails.
- You lose electrical power and/or do not have a charged battery in the unit.

When using this VoIP device, you may be able to make an emergency call to an operator, but E911 location services may not be available under the following circumstances:

- You have changed the physical address of your VoIP device, and you did not update or otherwise advise your VoIP service provider of this change.
- You are using a non-U.S. telephone number.
- There are delays in making your location information available in or through the local automatic location information database.

Note: *Your service provider, not Motorola, is responsible for the provision of VoIP telephony services through this equipment. Motorola shall not be liable for, and expressly disclaims, any direct or indirect liabilities, damages, losses, claims, demands, actions, causes of action, risks, or harms arising from or related to the services provided through this equipment.*

REGULATORY INFORMATION

FCC Compliance Class B Digital Device

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.

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 to 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 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.

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

Canada — Industry Canada (IC)

This Class B digital device complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

FCC Declaration of Conformity

According to 47CFR, Parts 2 and 15 for Class B Personal Computers and Peripherals; and/or CPU Boards and Power Supplies used with Class B Personal Computers, Motorola, Inc., 101 Tournament Drive, Horsham, PA 19044, 1-215-323-1000, declares under sole responsibility that the product identifies with 47CFR Part 2 and 15 of the FCC Rules as a Class B digital device. Each product marketed is identical to the representative unit tested and found to be compliant with the standards. Records maintained continue to reflect the equipment being produced can be expected to be within the variation accepted, due to quantity production and testing on a statistical basis as required by 47CFR 2.909.The above named party is responsible for ensuring that the equipment complies with the standards of 47CFR, Paragraph 15.101 to 15.109.

International Declaration of Conformity

We, Motorola, Inc., 101 Tournament Drive, Horsham, PA, U.S.A., declare under our sole responsibility that the SURFboard® SBV6120 DOCSIS® 3.0 Digital Voice Modem to which the declaration relates is in conformity with one or more of the following standards:

EN55022	EN55024	EN60950-1	EN61000-3-2	EN61000-3-3
CISPR-22	CISPR-24	IEC 60950-1	ETSI EN 300386	

The following provisions of the Directive(s) of the Council of the European Union:

- EMC Directive 2004/108/EC
- Low Voltage Directive 2006/95/EC

Models	**Standards**
SBV6120, SBV6120 Diagnostic	FCC Part 15, ICES-003 UL60950-1, CAN/CSA-C22.2 No. 60950-1
SBV6120, SBV6120E, SBV6120E Diagnostic	EN55022, EN55024, CISPR22, CISPR24, EN61000-3-2, EN61000-3-3, EN60950-1, IEC60950-1, ETSI EN 300386

Contents

1 Overview

The Motorola® SURFboard® SBV6120 DOCSIS® 3.0 Digital Voice Modem provides high-speed Internet access and up to two lines of VoIP (Voice-over-IP) telephone service, thus allowing you to use one device for your voice and data services over a single network.

The SBV6120 transmits and receives data much faster than traditional dial-up, DSL (digital subscriber line), or ISDN modems. Unlike a dial-up modem, your digital voice modem is always online, enabling you to open a Web browser without the long wait.

This guide is an instructional overview on how to install the SBV6120 digital voice modem and get it up and running.

Contact Information

For assistance with your SBV6120, contact your Internet Service provider.

For information on customer service, technical support, or warranty claims, see the Safety and Regulatory Information section at the beginning of this guide or the Motorola SBV6120 Software License, Warranty, Safety, and Regulatory Information card (SLWSR Card) included with the SBV6120 Digital Voice Modem.

For information about Motorola consumer cable products, education, and support, visit the Motorola support website at: http://broadband.motorola.com/consumers/support.

Standard Features

- Two RJ-11 telephony ports for voice, fax, and telephone modem operation
- 10/100/1000Base-T (RJ-45) Ethernet connection for high-speed data access
- Telephone modem and fax support
- VoIP telephone service, which offers the same features as a traditional telephone service:
  - Local and long distance calling
  - Three-way calling
  - Voicemail
  - Number redial
  - Speed dialing, Pulse dialing
  - Caller ID, Caller ID block, Call Waiting, Call Forwarding, Call Return
  - Dial-tone busy, Dial-tone stutter
  - On-hook, off-hook detection
  - Telephony Devices for the Disabled (TDD)

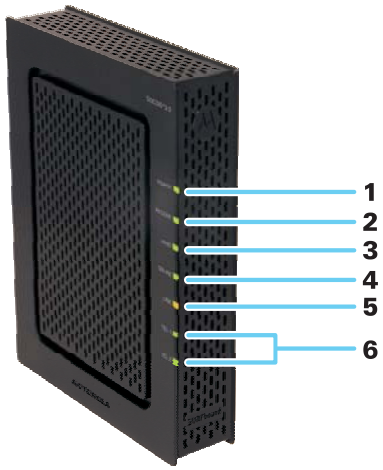
***Note**: Some of the listed features may not be available on your telephone. Contact your telephone service provider for additional feature availability.*

Front Panel

During normal operation, the POWER, RECEIVE, SEND, and ONLINE LEDs are always On. The LINK LED flashes when the digital voice modem is transferring data.

***Note**: The blue LED is an optional LED operation only available in some locations. Your service provider may activate the blue LED option for high-speed Internet and Ethernet connections.*

To increase the bandwidth available for receiving and transmitting data, your service provider may implement bonded channels for the RECEIVE and SEND LEDs. The LINK LED turns blue when a high-speed Gigabit Ethernet (GigE) connection is made.



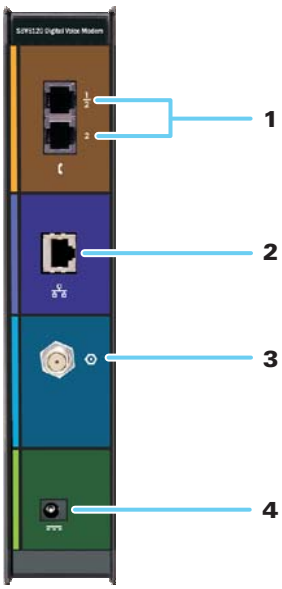
The SBV6120 front panel LEDs provide the following status information for power and communications:

SBV6120 Front Panel LEDs

	LED	Off	Flashing	On
1	**POWER**	Power is disconnected	Not applicable	**Green**: Voice modem's power is properly connected
2	**RECEIVE**	Receive channel not found	Scanning for a downstream channel connection	**Green**: Downstream channel is connected **Blue**: High-speed Internet connection with bonded channels

	LED	Off	Flashing	On
3	**SEND**	Send channel not found	Scanning for an upstream channel connection	**Green**: Upstream channel is connected **Blue**: High-speed Internet connection with bonded channels
4	**ONLINE**	Internet connection failed	Scanning for an Internet connection	**Green**: Startup process completed
5	**LINK**	No connection to SBV6120 Ethernet port detected	LAN activity: transmitting or receiving data	**Amber**: A computer or hub is connected to the Ethernet (10Base-T) or Fast Ethernet (100Base-T) port **Blue**: High-speed Gigabit Ethernet (1000Base-T) connection from the SBV6120 to the computer
6	**TEL 1** **TEL 2**	Telephone line is not set up for voice service. Contact your VoIP service provider.	Telephone is off-hook, dialing, or in use; telephone service is not provisioned	**Green**: Telephone is provisioned; on-hook

Rear Panel



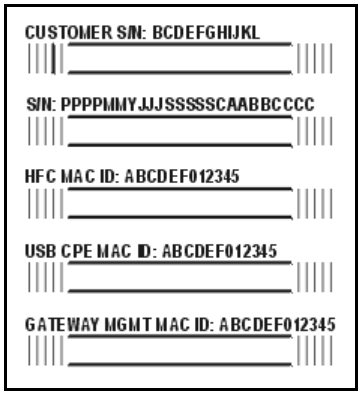
The rear panel contains the power receptacle and cabling ports and connectors:

SBV6120 Rear Panel Cabling Ports and Connectors

	Port/Connector	Description
1	**TEL 1/2** **TEL 2**	VoIP connection for a single or two-line telephone VoIP connection for a single-line telephone
2		Ethernet port
3		Coaxial cable connector
4		+12VDC power connector

MAC Label

The SBV6120 Media Access Control (MAC) label is located on the bottom of the SBV6120. The label contains the MAC address, which is a unique, 48-bit value that identifies each Ethernet network device. To receive data service, you will need to provide the MAC address marked **HFC MAC ID** to your Internet Service provider.



2 Getting Started

Before You Begin

Before starting the installation, check that the following items were included with your SBV6120 Digital Voice Modem:

Item		Description
Power Adapter and Cord		Provides power via an AC electrical outlet
10/100/1000Base-T Ethernet cable		Standard Cat 5, or higher, cable for connecting to the network
Software License and Regulatory Card		Contains software license, warranty and safety information for the SBV6120
SBV6120 Install Sheet		Provides basic information for setting up the SBV6120

You will also need a 75-ohm coaxial cable to connect the SBV6120 digital voice modem to the nearest cable outlet. If a TV is connected to the cable outlet, use a 5 to 1002 MHz RF splitter and two additional coaxial cables to connect the TV and the SBV6120.

Precautions

Postpone SBV6120 installation until there is no risk of thunderstorm or lightning activity in the area.

To avoid potential shock, always unplug the power cord from the wall outlet or other power source before disconnecting it from the SBV6120 rear panel.

To prevent overheating the SBV6120, do not block the ventilation holes on the sides of the unit. Do not open the unit. Refer all service to your Internet Service provider.

Signing Up for Internet Service

You must sign up with an Internet Service provider to access the Internet and other online services. To activate your service, call your local Internet Service provider and have the following information available:

- For data service, you will need the MAC address, **HFC MAC ID**, printed on the MAC label.
- For telephone service, you will need the MAC address, **MTA MAC ID**, printed on the MAC label.

System Requirements

Your computer must meet the following requirements:

- Pentium® class or better processor
- An established cable Internet connection
- Any web browser such as Microsoft® Internet Explorer®, Netscape Navigator®, or Mozilla® Firefox®
- Microsoft Windows® XP™, Windows Vista®, Macintosh®, UNIX®, or Linux® operating system

***Note**: Make sure all the latest service packs and patches for your operating system are installed on your computer.*

Ethernet Connection

You can connect any combination of Microsoft Windows, Macintosh, UNIX, or Linux computers to the SBV6120 LAN using an Ethernet connection. Your computer must have one of the following Ethernet cards with the proper driver software installed:

- Ethernet (10Base-T)
- Fast Ethernet (100Base-T)
- High-speed Gigabit Ethernet (1000Base-T) – A GigE Network Interface Card is needed to achieve the maximum data throughput rates

***Note:** The Ethernet card must already be installed in your computer before you install the digital voice modem.*

3 Installing the Digital Voice Modem

To install and configure the SBV6120 digital voice modem for a single PC with Microsoft Windows, do the following:

- Connect the digital voice modem to your computer and telephone
- Set up Internet access and verify the IP address for your computer

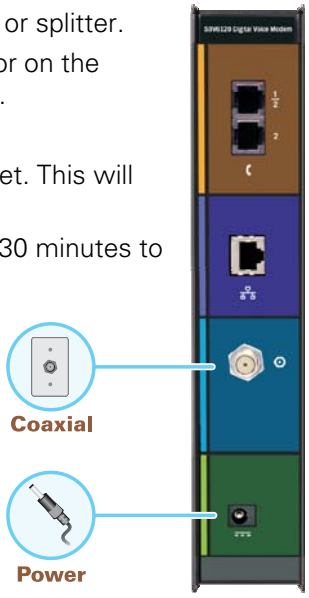
CAUTION! *This product is for indoor use only. Do not route the Ethernet and telephone cables outside of the building. Exposure of the cables to lightning could create a safety hazard and damage the digital voice modem.*

Connecting the SBV6120

Before starting this part of the installation, power off your computer and unplug the digital voice modem. To prevent damage to the SBV6120 from static electricity, perform each installation step in the following order:

1. Connect one end of the coaxial cable to a grounded cable outlet or splitter.
2. Connect the other end of the coaxial cable to the cable connector on the SBV6120. Hand-tighten the connectors to avoid damaging them.
3. Plug the power cord into the power connector on the SBV6120.
4. Plug the other end of the power cord into the electrical wall outlet. This will power on the SBV6120.

   The first time you plug in the SBV6120, it may take from five to 30 minutes to find and lock onto the appropriate communications channels.
5. Check that the LEDs on the front panel cycle through the sequence shown in the following table.



SBV6120 LED Activity During Startup

LED	Description
POWER	Turns on when AC power is connected to the SBV6120 Indicates that the power is connected properly
RECEIVE	Flashes while scanning for the downstream receive channel Changes to solid green when the receive channel is locked
SEND	Flashes while scanning for the upstream send channel Changes to solid green when the send channel is locked
ONLINE	Flashes during SBV6120 registration and configuration Changes to solid green when the SBV6120 is registered

Installing the Telephone for VoIP

The SBV6120 allows you to use your cable Internet connection for VoIP telephone service. You can connect up to two standard telephone lines on the SBV6120.

Before connecting the SBV6120 to your telephone line, contact your cable service provider. DO NOT connect the telephone cable from the TEL port on the SBV6120 to a traditional telephone wall jack; only connect it to a telephone.

CAUTION: *To reduce the risk of fire, use only No. 26 or larger UL Listed or CSA Certified Telecommunication Line Cord or national equivalent to connect a telephone line to your SBV6120.*

Use only a standard telephone. In many businesses, digital phones that connect to a private branch exchange (PBX) do not operate with the SBV6120.

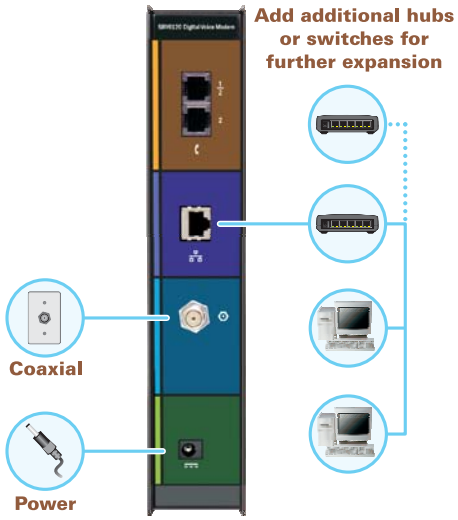
To connect a telephone to the SBV6120, do the following:

1. For a single or two-line telephone, plug the telephone cable into telephone and the TEL 1/2 port on the SBV6120.

Note*: You can only use the TEL 1/2 port to connect a two-line telephone. Also, pulse-dial devices are not supported.*

2. For a second single-line telephone, fax machine, or other device, plug the device cable into the device and the TEL 2 port on the SBV6120.
3. Connect an Ethernet cable to the Ethernet ports on the computer and SBV6120.

   Sample connections graphic shown below:



Testing the Connections

To verify that all the components were properly installed, perform the following connectivity test:

1. Power on your computer.
2. Check the LEDs on the SBV6120 front panel.
    - The TEL 1 and TEL 2 LEDs should be **on**, if the SBV6120 was provisioned for voice service. Otherwise, TEL 1 and TEL 2 will be **off**.
    - The remaining LEDs should be **on** or **flashing**.

***Note**: Refer to Front Panel Description for LED status information.*

3. Open a web browser.
4. Go to any website to check for an Internet connection.
5. Check the telephone for a dial tone. If there is no dial tone, then your telephone line is not set up for voice service.

    ***Note**: Contact your service provider to provision the telephony line(s).*

If the connectivity test failed, see Troubleshooting Tips for a possible solution.

You may now wall mount your SBV6120 digital voice modem. See Wall Mounting the SBV6120 for more information.

Obtaining an IP Address for an Ethernet Connection

To obtain the IP address for your computer's network interface, use one of the following options:

- Retrieve the statically defined IP address and DNS address
- Automatically retrieve the IP address using the Network DHCP server

The Motorola SBV6120 digital voice modem provides a DHCP server on its LAN. Configure your LAN to obtain the IPs for the LAN and DNS server automatically.

Configuring TCP/IP

You will not have to configure the SBV6120 digital voice modem. However, you must ensure that all client computers are configured for TCP/IP. Your cable provider may provide additional instructions to set up your computer.

Note: *For Macintosh or UNIX systems, follow the instructions in the applicable Macintosh or UNIX user documentation.*

Configuring TCP/IP in Windows XP

1. Open the **Control Panel**.
2. Double-click **Network Connections** to list the Dial-up and LAN or High-Speed Internet connections.
3. Right-click the network connection for your network interface.
4. Select **Properties** from the drop-down menu to display the Local Area Connection Properties window. Be sure Internet Protocol (TCP/IP) is checked.
5. Select **Internet Protocol (TCP/IP)** and click **Properties** to display the Internet Protocol (TCP/IP) Properties window.
6. Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**.
7. Click **OK** to save the TCP/IP settings and exit the TCP/IP Properties window.
8. Close the Local Area Connection Properties window and then exit the Control Panel.

After configuring TCP/IP on your computer, perform the applicable procedure to verify the IP address.

Configuring TCP/IP in Windows Vista

1. Open the **Control Panel**.
2. Click **Network and Internet** to display the Network and Internet window.
3. Click **Network and Sharing Center** to display the Network and Sharing Center window.
4. Click **Manage network connections** to display the LAN or High-Speed Internet connections window.
5. Right-click the network connection for the network interface you want to change.
6. Click **Properties** to display the Local Area Connection Properties window.

   Vista may prompt you for an administrator password or confirmation. Type the password or confirmation, then click **Continue**.
7. Click the **Networking** tab, then select **Internet Protocol Version 4 (TCP/IPv4)**.
8. Click **Properties** to display the Internet Protocol Version 4 (TCP/IPv4) Properties window.
9. Select **Obtain an IP address automatically** and **Obtain DNS server address automatically**.
10. Click **OK** to save the TCP/IP settings and close the Internet Protocol Version 4 (TCP/IPv4) Properties window.
11. Click **OK** to close the Local Area Connection Properties window.
12. Close the remaining windows and exit the Control Panel.

After configuring TCP/IP on your computer, perform the applicable procedure to verify the IP address.

Verifying the IP Address in Windows XP

To check the IP address:

1. On the Windows Desktop, click **Start**.
2. Select **Run**. The Run window is displayed.
3. Type **`cmd`** and click **OK**
4. Type **`ipconfig`** and press **`ENTER`** to display your IP configuration.

If an Autoconfiguration IP Address is displayed, this indicates cable network problems or an improper connection between your computer and the SBV6120.

Check the following:

- Your cable connections
- Whether you can see cable TV channels on your television

After successfully verifying your cable connections and proper cable TV operation, you can renew your IP address.

Verifying the IP Address in Windows Vista

Do the following to verify the IP address:

1. On the Windows Desktop, click **Start**.
2. Click **All Programs**.
3. Click **Accessories**.
4. Click **Command Prompt** to open a command prompt window.
5. Type **`ipconfig`** and press **`Enter`** to display the IP address.

If an Auto-configuration IP Address is displayed, this indicates an improper connection between your computer and the SBV6120, or there are broadband network problems.

Renewing Your IP Address

To renew your IP address in Windows XP or Windows Vista, do the following:

1. Open a command prompt window.
2. At the command prompt, type **`ipconfig /renew`** and press **`ENTER`** to obtain a new IP address.
3. Type **`exit`** and press **`ENTER`** to close the command prompt window.

If after performing this procedure your computer cannot access the Internet, call your cable provider for help.

Wall Mounting the SBV6120

Do the following to mount the SBV6120 on the wall:

- Locate the unit as specified by the local or national codes governing residential or business cable TV and communications services.
- Follow all local standards for installing a network interface unit/network interface device (NIU/NID).

If possible, mount the unit to concrete, masonry, a wooden stud, or some other very solid wall material. Use anchors if necessary (for example, if you must mount the unit on drywall).

CAUTION: *Before drilling holes, check the structure for potential damage to water, gas, or electrical lines.*

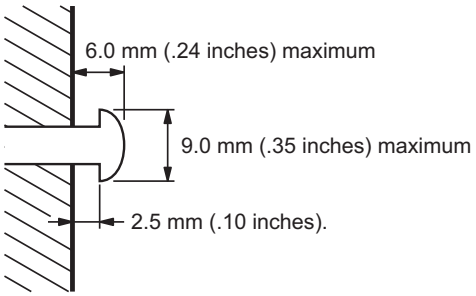
Make sure the AC power plug is disconnected from the wall outlet and all cables are removed from the back of the SBV6120 before starting the installation.

You can mount the SBV6120 horizontally or vertically. Do the following to mount your SBV6120 on the wall:

1. Remove the four rubber chassis feet from the bottom of the SBV6120.
2. Print a copy of the Wall Mounting Template.

   Make sure to print the template at 100% scale and that **No Scaling** is selected for Scale to paper size
3. Measure the printed template with a ruler to ensure that it is the correct size.
4. Use a center punch to mark the center of the holes.
5. On the wall, locate the marks for the mounting holes.
6. Drill the holes to a depth of at least 1 1/2 inches (3.8 cm).

   Use M3.5 x 38 mm (#6 x 11/2 inch) screws with a flat underside and maximum screw head diameter of 9.0 mm (.35 inches) to mount the SBV6120.
7. If necessary, install an anchor in each hole.
8. Using a screwdriver, turn each screw until the head protrudes from the wall, as shown in the following wall mounting screw dimensions illustration.



   There must be .10 inches (2.5 mm) between the wall and the underside of the screw head.

   The maximum distance from the wall to the top of the screw head is 6.0 mm (.24 in)
9. Place the SBV6120 so the keyholes on the back of the unit are aligned above the mounting screws.
10. Slide the SBV6120 down until it stops against the top of the keyhole opening.
11. After mounting, reconnect the coaxial cable input and Ethernet connection.
12. Plug the power cord into the power connector on the SBV6120 and the electrical outlet.
13. Route the cables so that they will not be a safety problem.

Wall Mounting Template

You can print the following page to use it as the wall mounting template. Measure the printed template to verify the dimensions.

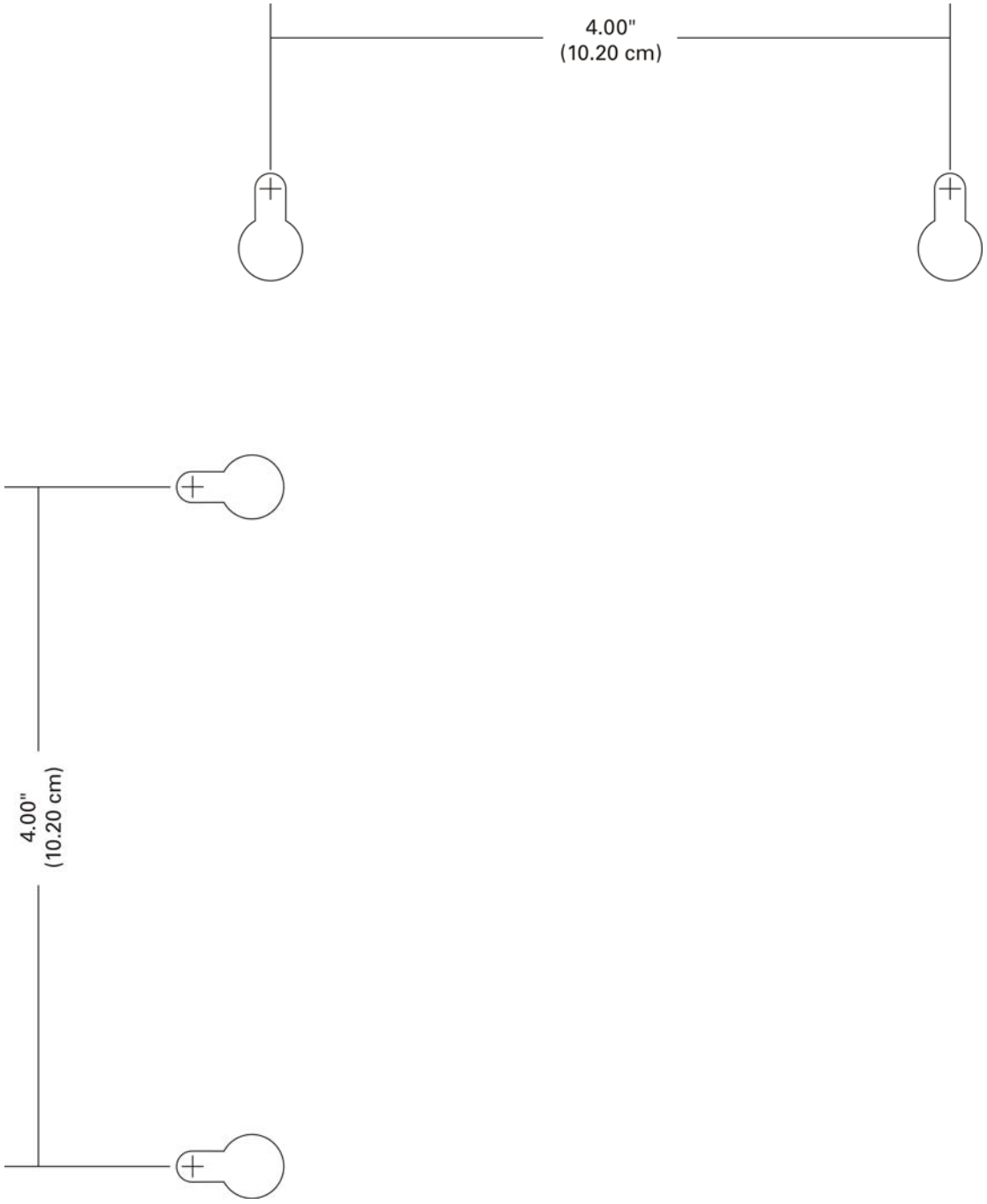


Figure 1 SBV6120 Wall Mounting Template

4 Troubleshooting Tips

If the solutions listed in the table below do not resolve your problem, contact your service provider.

***Note**: Before calling your service provider, try unplugging and replugging the power cord on the rear of the SBV6120. Resetting the SBV6120 may take five to 30 minutes.*

Your service provider may ask for the status of the front panel lights as described in Front-Panel LEDs and Error Conditions.

Solutions

Problem	Possible Solution
Power LED is off - or - All Front Panel LEDs are off	• Check that the power cord is properly plugged into the electrical wall outlet and the SBV6120. • Check that the power cord is not plugged into a switch-controlled outlet and that it is a live electrical outlet.
SBV6120 cannot send or receive data	• Check the LEDs on the front of the SBV6120. Note the first LED from top to bottom that is off or flashing. This LED indicates where the error occurred, as described in Front Panel LEDs and Error Conditions. • **POWER**, **RECEIVE**, and **SEND** LEDs should always be on. • **ONLINE** LED should be on; **LINK** LED should be flashing. • If you have cable TV service, then you can determine if the cable system is working properly by viewing a channel on your TV. If you do not have cable TV service, then you must contact a cable service provider. If you cannot receive regular TV channels or see a picture on the TV, then the data and VoIP telephone services will not work; you will need to contact your service provider. • Check the coaxial cable connection on the SBV6120 and cable service wall outlet. Hand-tighten cable connectors, if necessary. • Check that the Ethernet cable is properly connected to the SBV6120 and your computer. • Check the IP address. Follow the steps for verifying the IP address for

Problem	Possible Solution
	your operating system described in Configuring TCP/IP. Call your service provider if you need an IP address.
No telephone service **- or -** **TEL 1 or TEL 2 LED is off**	• If your telephone requires external power, check the AC power connection to your telephone. • Check the connection between the SBV6120 and your telephone. If they are properly connected and the TEL 1 or TEL 2 LED remains off, the telephone line is not set up for voice service. Contact your service provider. • Check the coaxial cable on the SBV6120 and the electrical outlet. Hand-tighten the cable connectors if necessary. • Check the lights on the front panel. Make sure the green power light is on. If it is not, check that the power cord is properly plugged into the electrical outlet and the digital voice modem. • If you have cable TV, check that your TV is working and the picture is clear. If you cannot receive your regular TV channels, your telephone service will not function.

Front Panel LEDs and Error Conditions

LED	Turns Off During Startup, If:	Turns Off During Normal Operation, If:
POWER	SBV6120 is not properly plugged into the power outlet	SBV6120 is unplugged
RECEIVE	Downstream (receive) channel cannot be acquired	Downstream channel is lost
SEND	Upstream (send) channel cannot be acquired	Upstream channel is lost
ONLINE	IP registration is unsuccessful	IP registration is lost
TEL 1 or TEL 2	If either TEL LED fails to flash during startup, telephone line configuration has failed	Connected during a phone call and does not blink, telephone connection is lost

A Software License

SURFboard SBV6120 DOCSIS 3.0 Digital Voice Modem

Motorola, Inc.
Home & Networks Mobility Solutions Business ("Motorola")
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Horsham, PA 19044

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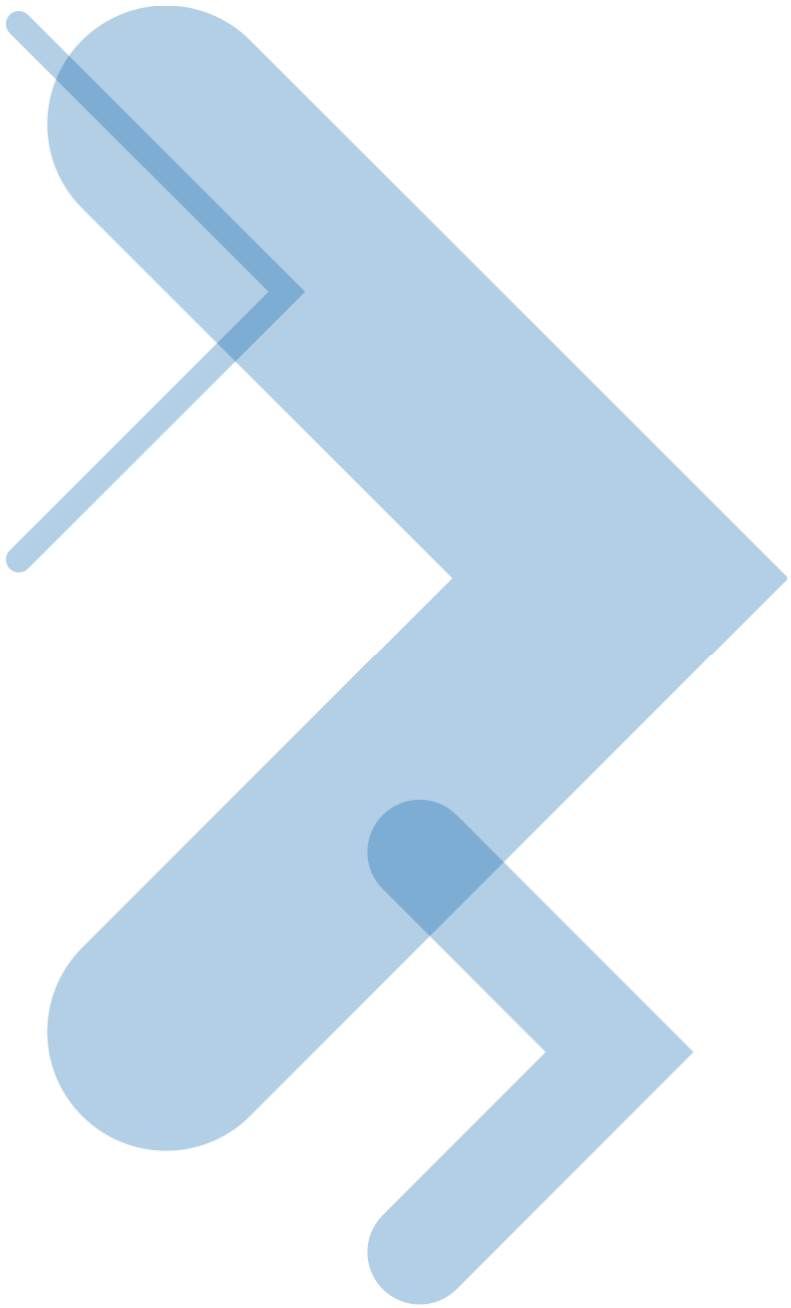

Motorola, Inc.
101 Tournament Drive
Horsham, PA 19044 U.S.A.

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