

# SURFboard™



## SURFboard® S33 DOCSIS® 3.1 cable modem

User guide

May 2020

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# Safety and regulatory information

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Read all safety and regulatory information before installing your cable modem and setting up your home network connection.

## 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 electrical 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 electrical 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 electrical surge protector in the electrical 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 during lightning activity or 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 104° F (40° C)

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 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 8 inches (20.3 centimeters).

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.

## Caring for the environment by 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. If collection systems are not available, call ARRIS Technical Support at **1-877-466-8646** for assistance.

## Getting started





The ARRIS SURFboard® S33 DOCSIS 3.1 cable modem provides ultra high-speed internet access over the broadband connection on your home or small business network. You use your S33 to directly connect a computer or router to your LAN through an Ethernet connection.

This guide provides instructions for installing and setting up your S33 to get it connected on your home or small business network; as well as viewing and monitoring the S33 operational status and network configuration settings.

## In the box

Before installing your S33, check that the following items are included in the box. If any items are missing, please call ARRIS customer support at **1-877-466-8646** for assistance.

**Table 1. S33 package contents**

Item		Description
<b>S33 cable modem</b>		DOCSIS 3.1 cable modem
<b>Power supply</b>		Power adapter for an electrical wall outlet connection
<b>Software license &amp; regulatory card</b>		Contains safety and regulatory information, software license, and warranty for the cable modem.
<b>S33 quick start guide</b>		Provides instructions for installing the cable modem and setting up your home network connection.



## Additional items needed (not included)

The following items are not included in the box and must be purchased separately, if needed.

- **Coaxial (coax) cable** - if one is not already connected to a cable wall outlet
- **RF splitter** – for additional coaxial cable connections, such as a set-top box or Smart TV
- **Ethernet cable** – for any wired connected device(s)

## 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)



**Note:** *Although older versions of Microsoft Windows operating systems are no longer specifically supported, they should still function with your S33.*

- Macintosh® 10.4 or higher
- UNIX®
- Linux®

## Contact information

For customer service, technical support, and additional ARRIS product information:

- Visit the ARRIS Support website: [www.arris.com/selfhelp](http://www.arris.com/selfhelp)
- Call ARRIS Technical Support: **1-877-466-8646** (US toll-free)

## Product overview

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### Front panel

There is only one LED bar on the S33 front panel. It is located beneath the SURFboard logo on the front of the S33.



Figure 1: S33 front view

Table 2. S33 front panel LED status indicator

LED color	Description
<b>Amber</b> (solid)	Power on/off status
<b>Amber</b> (flash)	Firmware download is in progress
<b>Green</b> (blink)	Downstream/upstream channel search (unlock status)
<b>Green</b> (solid)	Online status in DOCSIS 3.0 mode
<b>Blue</b> (solid)	Online status in DOCSIS 3.1 mode
<b>Blue &amp; Green</b> (alternating flash)	Error mode

## Rear panel

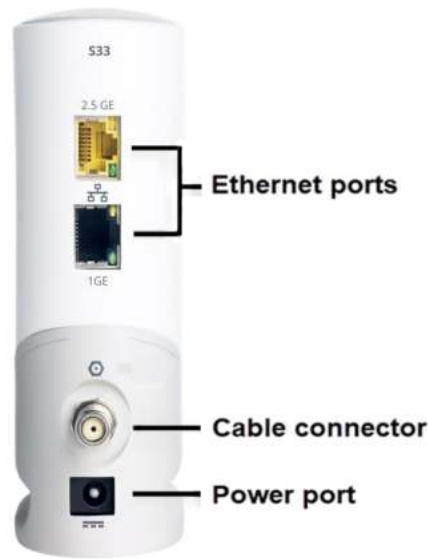






Figure 2: S33 rear view

Table 3. S33 rear panel ports & connectors

Port name	Description
 ETHERNET	<b>1 GE</b> and <b>2.5 GE</b> Ethernet ports for RJ-45 network cable connections: <b>Green:</b> LED indicates a GigE data connection is made <b>Amber:</b> LED indicates a 10/100 Mbps data connection is made
 CABLE	Coaxial cable connector
 POWER	+12 VDC Power connector  <b>WARNING!</b> To avoid any damage to your S33, only use the power supply provided in the box.
<b>Reset button</b>	Reset button located on the bottom of your S33 can be used to either restart your S33 or reset the S33 configuration settings. See the following for more information. <ul style="list-style-type: none"> <li>■ <a href="#">Restart your S33</a></li> <li>■ <a href="#">Reset the S33 configuration settings</a></li> </ul>

## Cable modem label

The cable modem label is located on the bottom of your S33. It contains the cable modem information that you may need when contacting your service provider or [ARRIS Technical Support](#) (page [10](#)).

To receive internet service, contact your service provider for assistance. You may have to provide the following information listed on the S33 label:

- Cable modem model name (**S33**)
- Cable modem Serial number (**S/N**)
- Cable modem MAC address (**HFC MAC ID**)

## Installing the cable modem



**Caution:** 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.

### Connect the S33 to your client device (computer)

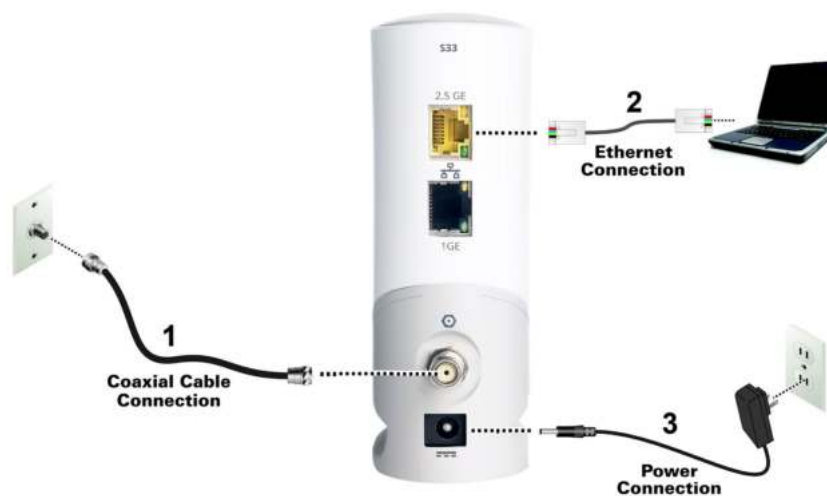
Do the following before connecting your S33:

- Contact your service provider or a local cable company to make sure broadband cable service is available in your area.



**Note:** When contacting your service provider, you will need the S33 cable modem information listed on the S33 label on the bottom of your S33 (see [Cable modem label](#) on page [13](#) for more information).

- Choose a location in your home where your S33 and computer will be near existing cable and electrical wall outlets.



**Figure 3: S33 connection diagram**

1. Check that a coaxial cable is already connected to a cable wall outlet or RF splitter (not included).
2. Connect the other end of the coaxial cable to the **Cable** connector on the rear of your S33. Use your hand to tighten the connectors to avoid damaging them.
3. Connect an Ethernet cable to the **2.5 GE Ethernet** port on the rear of your S33.

4. Connect the other end of the Ethernet cable to an available **Ethernet** port on your computer, laptop, or router.

**Optional:** Repeat steps 3 and 4 for an additional client device or other network-enabled device that you want to install as a wired connection on your home network.



**Note:** Your service provider may not support activation of the second Ethernet port or may require an additional fee for use. Contact your service provider for more information.

5. Connect the power supply to the **Power** port on the rear of your S33.
6. Plug the other end of the power supply into an electrical wall outlet that is not controlled by a wall switch.



**Note:** The S33 automatically powers ON. The **Power** LED on the S33 front panel may take up to 15 seconds to light up after the power is connected.

## Establish an internet connection

Although your computer or laptop may be configured to automatically access the internet, you should still perform the following cable modem connectivity test to check that your S33 and computer or laptop are connected on your home network.

1. Power ON your computer or laptop connected to your S33, if it is turned off; then log on.
2. Check that the front panel LED on your S33 lights up.
3. Contact your service provider to activate your S33.

You may have to provide the **HFC MAC ID** listed on the S33 label.



**Note:** Your service provider may allow for automatic activation which will automatically launch their special website on your computer or laptop when you open a web browser.

4. To activate your internet service, select your service provider's activation web site:
  - Comcast/Xfinity: [xfinity.com/activate](http://xfinity.com/activate)
  - Cox: [www.cox.com/activate](http://www.cox.com/activate)
  - Spectrum: [spectrum.net/selfinstall](http://spectrum.net/selfinstall)
5. After your S33 is provisioned (or activated), open a web browser (such as Internet Explorer, Google Chrome, Firefox, or Safari) on your connected laptop or computer.
6. Type a valid URL (such as [www.surfboard.com](http://www.surfboard.com)) in the Address bar and then press **Enter**. The ARRIS SURFboard website should open. If the website fails to open, please contact your service provider for assistance to either reactivate your S33 or check for possible signal issues.
7. Check that the S33 front panel LED lights up to confirm that the S33 is connected to the internet.



**Note:** If you still cannot connect to the internet, please contact ARRIS Technical Support at **1-877-466-8646** for assistance.

## Using the cable modem web manager

You can use the S33 web manager to view and monitor the S33 operational status and network configuration settings. You can also use the web manager to reset or reboot your S33.



**Note:** If you did not purchase your S33 from a retail store, you may notice that some of the S33 web manager configuration settings may be blocked and cannot be modified. This may be due to some restrictions that were set up by your service provider to prevent unauthorized modifications to certain cable modem configuration parameters.

### Start the S33 web manager

If this is your first time logging on to the S33 web manager, you must use **admin** for the username.

For network security, you are required to change the user password after logging on for the first time..

1. Open any web browser on the computer connected to your S33.
2. Type the default LAN IP address, **192.168.100.1**, in the address bar.
3. Press **Enter** to open the S33 Login screen.

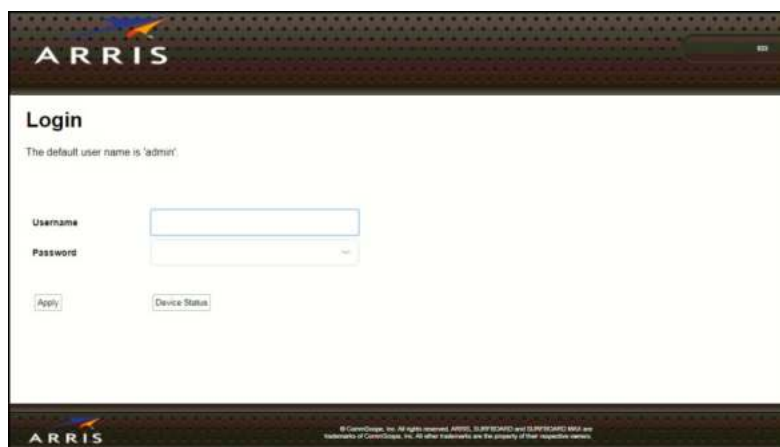
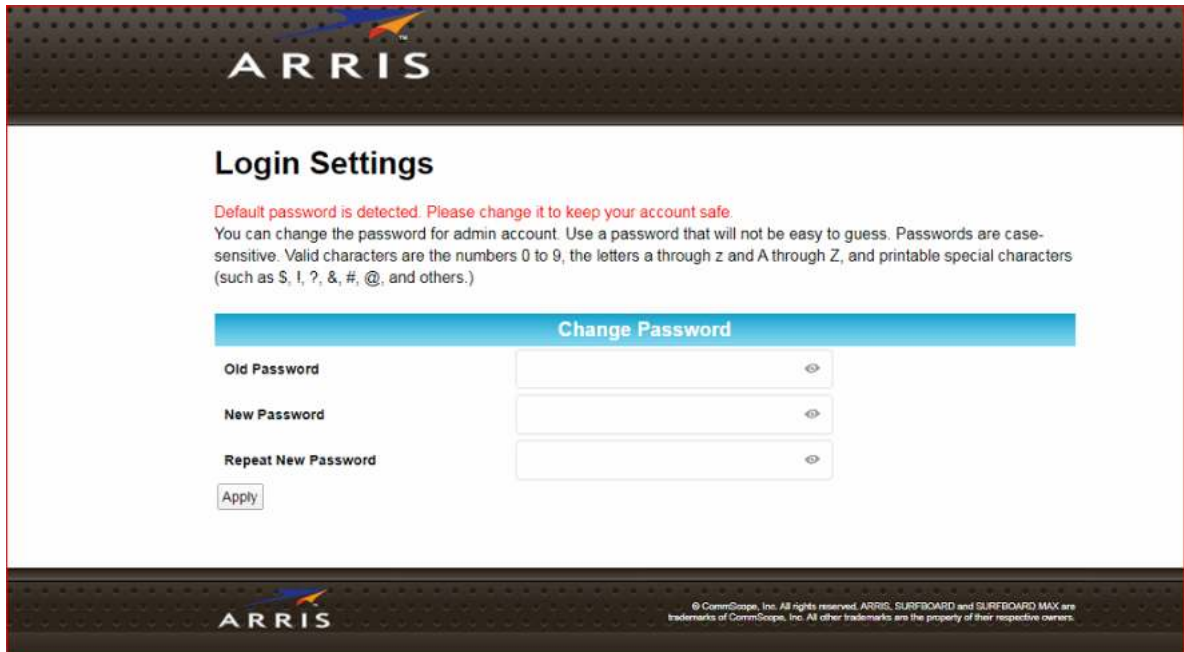


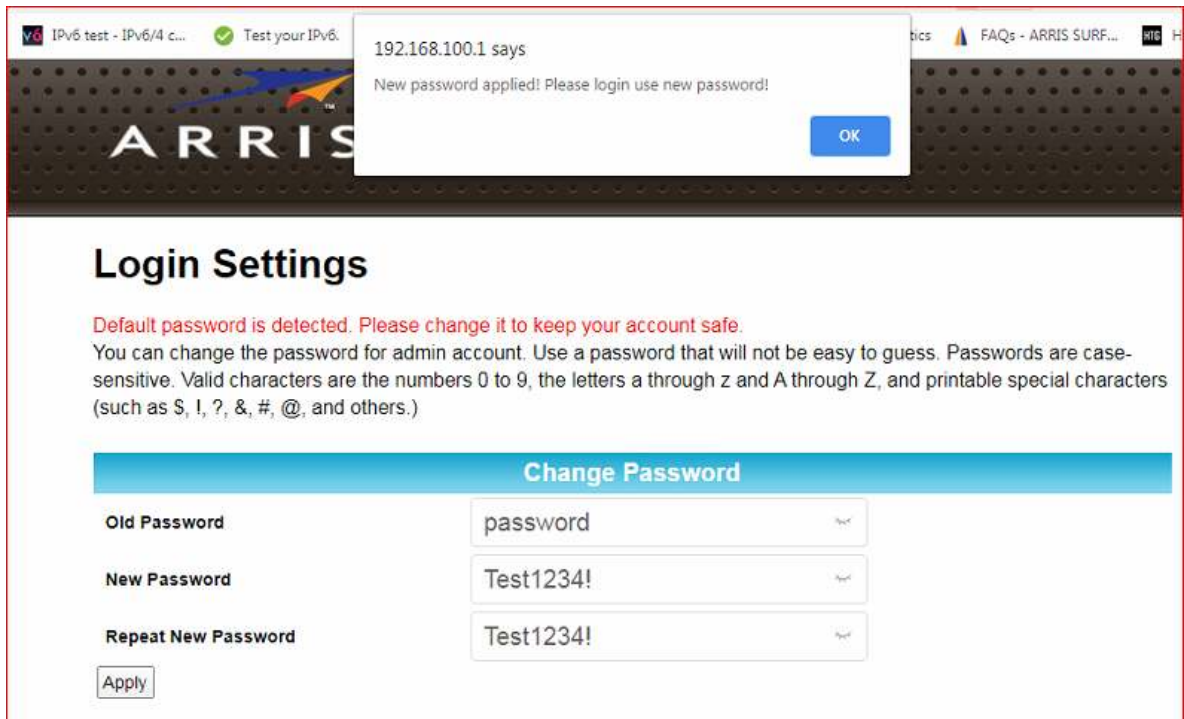
Figure 4: S33 Login screen

4. Enter **admin** in the Username field.
5. Enter **password** in the Password field.
6. Click **Apply** to open the S33 web manager.

- On the **Login Settings** screen, on first use, you will be prompted for a new password. Enter **password** for your old password and a new password in the **New Password** field. Repeat the new password to confirm.



- On the **New password applied** dialog box, click **OK**.





9. The S33 web manager displays the **Product Registration** window. Click one of the following to open the S33 Connection screen:

- **Register**
- **Ask me later**
- **Stop asking**

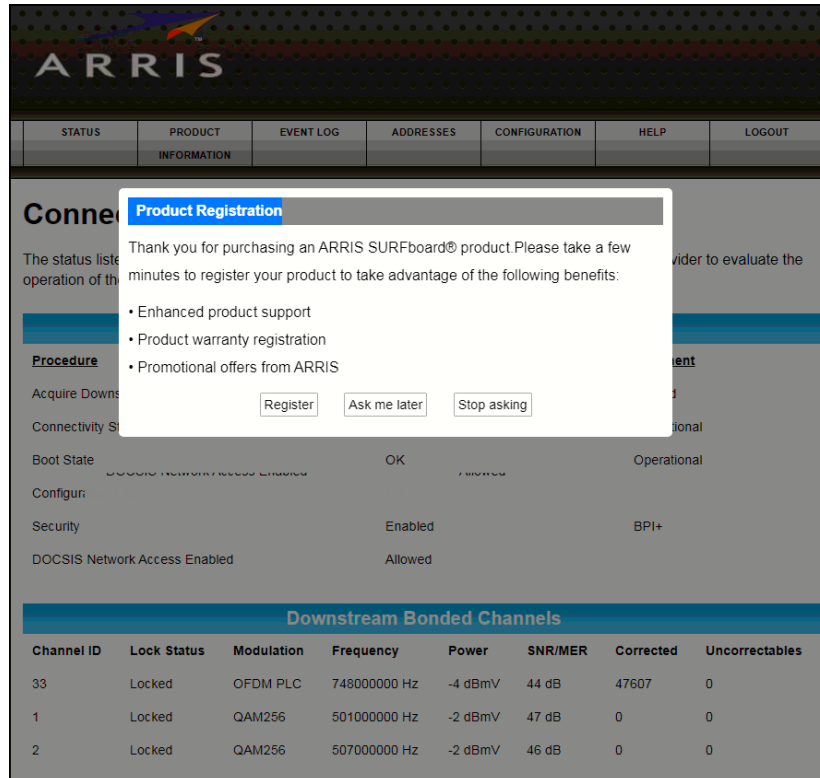


Figure 5: S33 opening screen

10. The S33 web manager displays.

**ARRIS** S33

STATUS PRODUCT INFORMATION EVENT LOG ADDRESSES CONFIGURATION HELP LOGOUT

### Connection

The status listed show the connection state of the cable modem. They are used by your service provider to evaluate the operation of the cable modem.

Startup Procedure		
Procedure	Status	Comment
Acquire Downstream Channel	748000000 Hz	Locked
Connectivity State	OK	Operational
Boot State	OK	Operational
Configuration File	OK	
Security	Enabled	BPI+
DOCSIS Network Access Enabled	Allowed	

Downstream Bonded Channels							
Channel ID	Lock Status	Modulation	Frequency	Power	SNR/MER	Corrected	Uncorrectables
33	Locked	OFDM PLC	748000000 Hz	-4 dBmV	44 dB	47607	0
1	Locked	QAM256	501000000 Hz	-2 dBmV	47 dB	0	0
2	Locked	QAM256	507000000 Hz	-2 dBmV	46 dB	0	0
3	Locked	QAM256	513000000 Hz	-2 dBmV	46 dB	0	0
4	Locked	QAM256	519000000 Hz	-3 dBmV	46 dB	0	0
5	Locked	QAM256	525000000 Hz	-3 dBmV	46 dB	0	0
6	Locked	QAM256	531000000 Hz	-3 dBmV	46 dB	0	0

Figure 6: S33 Connection screen

## S33 web manager screen options

### Menu buttons

You can use the web manager buttons to view the status and network configuration screens for your S33.

- The S33 menu buttons are displayed along the top of the S33 web manager screen. To display a specific web manager screen, click the menu button.



Figure 7: S33 web manager menu buttons

Table 4. S33 web manager screen options

Screen Option	Function
<b>Status</b>	Provides the current operational status of the cable modem.
<b>Product information</b>	Provides the current hardware and software-related information for the cable modem.
<b>Event log</b>	Displays a listing of the time and actual events as they occur and are detected by the cable modem.  This information may be useful to help diagnose and correct any problems that may occur with the cable modem.
<b>Addresses</b>	Provides the serial number and MAC addresses for the cable modem and computers connected on your home network.
<b>Configuration</b>	Provides the network connection frequency and channel ID information for the cable modem.
<b>Help</b>	Provides a brief description for each screen option and general troubleshooting tips.
<b>Logout</b>	Closes the web manager.


## Get help

The Help pages screen provides a brief description for each S33 web manager screen.

- Click the **Help** menu button or link on the S33 web manager screen to open the S33 Help Pages screen.

## Exit the S33 web manager

To exit the S33 web manager:

- Click  (**Close** button) in the upper right corner of the web browser window.

# Monitoring your cable modem and connected network



**Note:** You may notice that some of the S33 web manager configuration settings may be blocked and cannot be modified. This may be due to some restrictions set up by your service provider for security reasons and also to prevent unauthorized modifications to certain cable modem configuration parameters. Contact your service provider to obtain special authorization to change the cable modem frequencies or other configuration settings.

## View the Downstream bonded channels

The S33 generates a running log of the time and events or activities that it detects during the cable modem operation.



**Note:** This information may be useful to help diagnose and correct any problems that may occur with your cable modem. You may want to provide this information if you have to contact [ARRIS Technical Support](#) or your service provider for assistance.

To open the Downstream bonded channels screen:

1. Open the S33 web manager (see [Start the S33 web manager](#) for more information).
2. Click the **Downstream bonded channels** menu button or link on the S33 web manager screen.

Downstream Bonded Channels							
Channel ID	Lock Status	Modulation	Frequency	Power	SNR/MER	Corrected	Uncorrectables
33	Locked	OFDM PLC	748000000 Hz	-4 dBmV	44 dB	47607	0
1	Locked	QAM256	501000000 Hz	-2 dBmV	47 dB	0	0
2	Locked	QAM256	507000000 Hz	-2 dBmV	46 dB	0	0
3	Locked	QAM256	513000000 Hz	-2 dBmV	46 dB	0	0
4	Locked	QAM256	519000000 Hz	-3 dBmV	46 dB	0	0
5	Locked	QAM256	525000000 Hz	-3 dBmV	46 dB	0	0
6	Locked	QAM256	531000000 Hz	-3 dBmV	46 dB	0	0
7	Locked	QAM256	537000000 Hz	-3 dBmV	46 dB	0	0
8	Locked	QAM256	543000000 Hz	-3 dBmV	46 dB	0	0
9	Locked	QAM256	549000000 Hz	-3 dBmV	46 dB	0	0
10	Locked	QAM256	555000000 Hz	-3 dBmV	46 dB	0	0
11	Locked	QAM256	561000000 Hz	-3 dBmV	46 dB	0	0
12	Locked	QAM256	567000000 Hz	-3 dBmV	46 dB	0	0

**Figure 8: S33 downstream bonded channels screen**

3. Press **F5** to refresh or update the information on the screen.

## Restart your S33

To restart your S33:

1. Insert the end of a paper clip or other small object with a narrow tip into the **Reset** opening on the back of your S33.
2. Press and hold the indented **Reset** button for three to four seconds only, and then release.



**WARNING!** If you press the **Reset** button for more than seven seconds, the cable modem configuration settings will be reset to the factory default settings.

## Reset the S33 configuration settings

You can reset the factory default configuration settings on your S33. This process will delete the current S33 configuration settings and take approximately five to 30 minutes to complete. Your network connection will remain disabled until after the S33 configuration settings are restored.



**WARNING!** Resetting the S33 configuration settings to the factory defaults also deletes any custom cable modem configurations, including your login password, and other configuration settings. You should first back up your S33 configuration files before resetting your S33.

To reset the cable modem configuration back to the factory default settings:

1. Insert the end of a paper clip or other small object with a narrow tip into the **Reset** opening on the back of your S33.
2. Press and hold the indented **Reset** button for 10 seconds or until the front panel LED flashes.
3. Remove the paper clip or small object from the **Reset** opening.

## Troubleshooting tips

If the solutions listed in the Troubleshooting solutions table below do not resolve your problem, please contact your service provider for assistance. Your service provider may ask for the status of the S33 front panel LED for more information).

You may have to reset the S33 configuration to the default factory settings if your S33 is not functioning properly. See [Reset the cable modem configuration settings](#) for more information.

## Solutions

**Table 5. Troubleshooting solutions**

Modem problem	Possible solution
<b>Cannot send or receive data</b>	<ul style="list-style-type: none"> <li>■ Check each end of the coaxial cable connection on the cable modem and cable wall outlet. Use your hand to tighten each connector, if necessary.</li> <li>■ Check the Ethernet cable to make sure it is properly connected to the cable modem and computer.</li> <li>■ If you have cable television service, check your television to ensure your cable service is operating properly.</li> <li>■ If none of the above solutions resolves the problem, contact your service provider or call ARRIS Technical Support at <b>1-877-466-8646</b> for assistance.</li> </ul>
<b>Cannot access the internet</b>	<ul style="list-style-type: none"> <li>■ Check that all cable and power connections on your cable modem and computer are properly connected.</li> <li>■ Check that the front panel LED icon on the front panel is lit up solid.</li> <li>■ Contact your service provider for assistance.</li> </ul>

## Warranty information

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SURFboard S33 DOCSIS 3.1 cable modem

ARRIS Enterprises, LLC ("ARRIS")

**Retail purchasers:** If you purchased this Product directly from ARRIS or from an authorized ARRIS retail reseller, ARRIS warrants to you, the original end user customer, that **(A)** the Product, excluding Software, will be free from defects in materials and workmanship under normal use, and **(B)** with respect to Software, (i) the media on which the Software is provided will be free from defects in material and workmanship under normal use, and (ii) the Software will perform substantially as described in its documentation. This Limited Warranty to you, the original end user customer, continues **(A)** for Software and the media upon which it is provided, for a period of ninety (90) days from the date of purchase from ARRIS or an authorized ARRIS reseller, and **(B)** for the Product (excluding Software), for a period of two (2) years from the date of purchase from ARRIS or from an authorized ARRIS reseller. To take advantage of this Limited Warranty or to obtain technical support, you must call the ARRIS toll-free phone number: **1-877-466-8646**. ARRIS' sole and exclusive obligation under this Limited Warranty for retail sales shall be to repair or replace any Product or Software that does not meet this limited warranty. All warranty claims must be made within the applicable Warranty period.

**Cable operator or service provider arrangements.** If you did not purchase this Product directly from ARRIS or from an ARRIS authorized retail reseller, ARRIS does not warrant this Product to you, the end-user. A limited warranty for this Product (including Software) may have been provided to your cable operator or Internet Service Provider ("Service Provider") from whom you obtained the Product. Please contact your Service Provider if you experience problems with this Product.

**General information.** The warranties described in this Section shall not apply: (i) to any Product subjected to accident, misuse, neglect, alteration, Acts of God, improper handling, improper transport, improper storage, improper use or application, improper installation, improper testing or unauthorized repair; or (ii) to cosmetic problems or defects which result from normal wear and tear under ordinary use, and do not affect the performance or use of the Product. ARRIS' warranties apply only to a Product that is manufactured by ARRIS and identified by ARRIS owned trademark, trade name or product identification logos affixed to the Product. ARRIS does not warrant to you, the end user, or to anyone else that the Software will perform error free or without bugs.

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What additional provisions should I be aware of? Because it is impossible for ARRIS to know the purposes for which you acquired this Product or the uses to which you will put this Product, you assume full responsibility for the selection of the Product for its installation and use. While every reasonable effort has been made to insure that you will receive a Product that you can use and enjoy, ARRIS does not warrant that the functions of the Product will meet your requirements or that the operation of the Product will be uninterrupted or error-free.

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