

CiRA™ C101S EV-DO

802.11 b/g Cellular Internet Routing Appliance

User Guide



1. Federal Communications Commission (FCC) Interference Statement

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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. If not installed and used in accordance with the instructions, it 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 tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the distance between the equipment and the receiver.
- Connect the equipment to 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 2 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.



Caution: Exposure to Radio Frequency Radiation

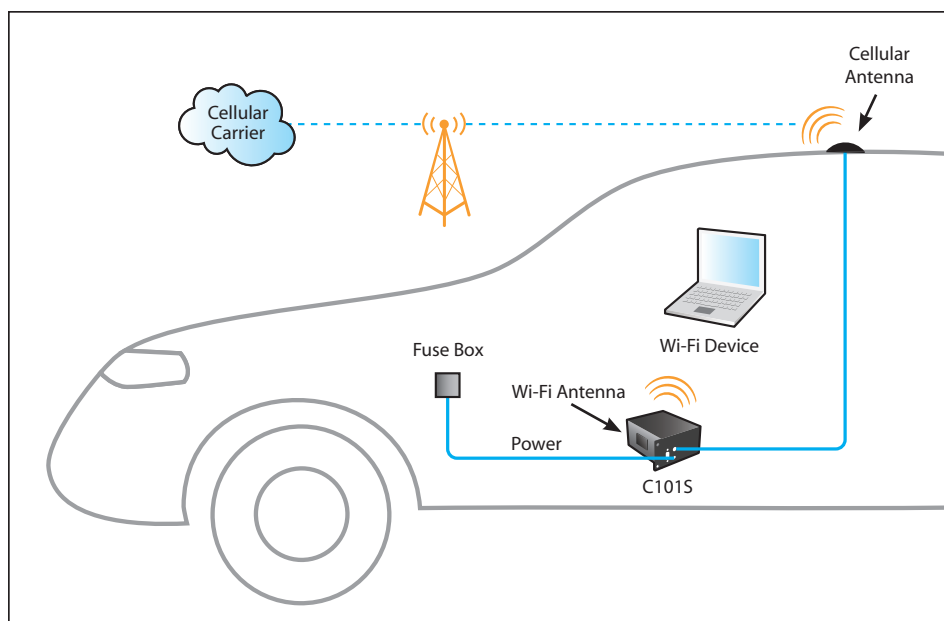
To comply with FCC RF exposure compliance requirements, for mobile configurations, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.

This device must not be co-located or operating in conjunction with any other antenna or transmitter.

2. Introducing the C101S by Feeney Wireless

The Feeney Wireless CIRA™ (Cellular Internet Routing Appliance) C101S is an ideal solution for maximizing the value of wireless cellular data networks. Designed to function in harsh mobile environments, the C101S enables multiple devices to share a single cellular connection. The C101S features a low-profile black enclosure with mounting brackets making it ideal for unobtrusive in-vehicle installation.

The C101S features ALEOS™ technology, the industry benchmark for reliable and feature-rich embedded intelligence. With extensive capabilities like remote monitoring and configuration, packet-level diagnostics and over-the-air firmware updates, ALEOS™ simplifies integration, installation, operation and maintenance of any wireless data solution. ALEOS™ provides the “always-on” and “always aware” connection management required for today’s mission-critical applications.



Vehicle-Ready Design

The C101S connects directly to your vehicle’s power supply. The C101S is easily concealed in a trunk, beneath the dash, or under a seat. The C101S will work with most Dual-Band PCS cellular antennas using a standard SMA connector.

3. C101S Components

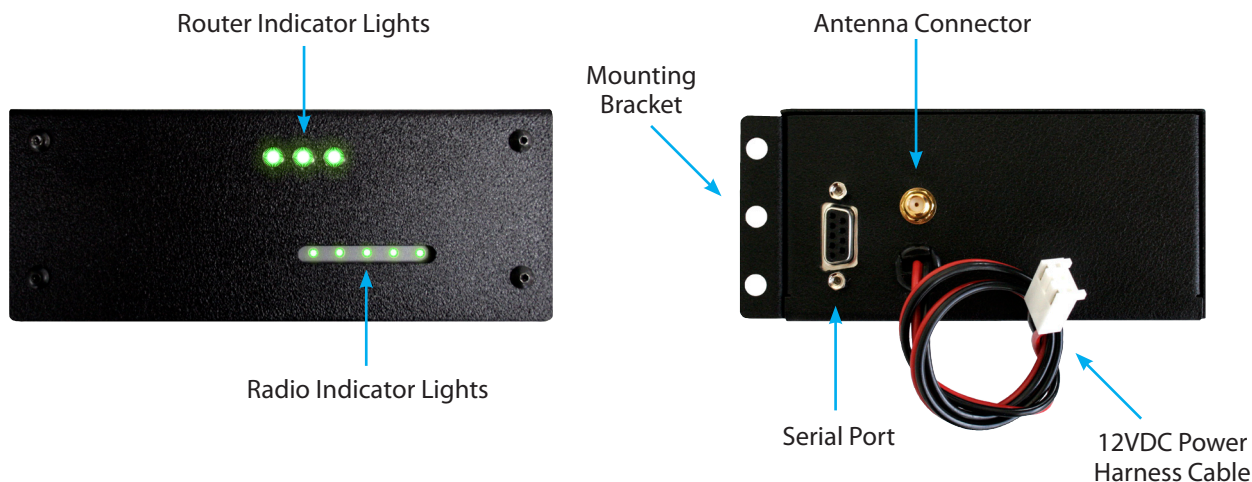
3.1 AirLink Cellular Radio

The C101S features an embedded AirLink radio powered by ALEOS™ technology. The C101S features advanced processing power within an enhanced scalable architecture optimized for high-speed cellular networks.

3.2 Secure Wireless Access Point

The C101S contains an embedded 802.11b/g wireless Access Point with support for advanced WPA2 wireless security, firewall, DoS protection and VPN pass-through.

The C101S allows you to share a single public IP address with all of your wireless network devices, making connecting to the Internet as easy as possible while also offering protection from Internet threats. The Wi-Fi certified 802.11b/g access point supports all major wireless security standards ensuring compatibility and security for your network.



4. Starting the Setup Wizard

You will need to setup the AirLink radio using the AirLink Setup Wizard available on the AirLink website: <http://www.airlink.com/support>. Use only the Setup Wizard for the Sprint Raven X for best results.



Note: the Setup Wizard requires the Microsoft .NET framework v 1.1 and Microsoft Windows 98, Windows 2000, Windows XP, or later.

- a. Connect the C101S to a computer with a straight-thru male to female 9 Pin serial cable.
- b. Connect the power adapter and antenna to your C101S.
- c. Install the Setup Wizard by running SprintSetupWizard.exe and follow the prompts.

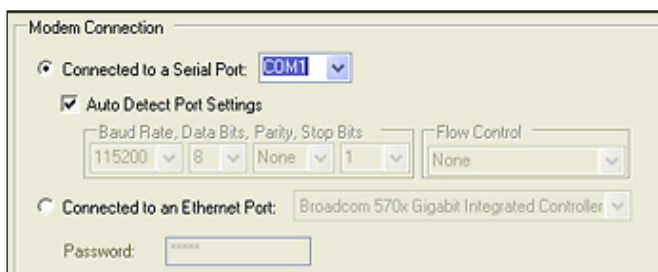
Start>All Programs>AirLink Communications>Setup Wizard>Setup Wizard



5. Connecting the AirLink Radio

The Setup Wizard needs to establish a connection to the radio. When it connects, the Setup Wizard will automatically detect the model of your radio to offer specific tasks.

After you connect your C101S to the serial port on your computer, select **Connected to a Serial Port**, check **Auto Detect Port Settings** or select the port from the drop down menu. Click **Next**.



6. Selecting Tasks

After the model of your radio is detected, you will be offered a menu of Setup tasks. Select **Update Firmware**, **Activate Modem** and **Test Modem Setup**. Click **Next**.

- ☒ Update Firmware
- ☒ Activate Modem
- ☐ Setup Data Link
- ☒ Test Modem Setup
- ☐ Setup DUN Connection

Update ALEOS Firmware: Check the AirLink servers for the latest ALEOS firmware.

Activate Modem: Configure your C101S to connect on the Sprint network.

Setup Data Link: Change the network parameters for your radio, Data Link accounts ONLY. This optional step can be done as a part of the activation process or it can be done separately after the radio has been activated.

Test Modem Setup: Verify your AirLink radio is properly configured and connecting on Sprint's network.

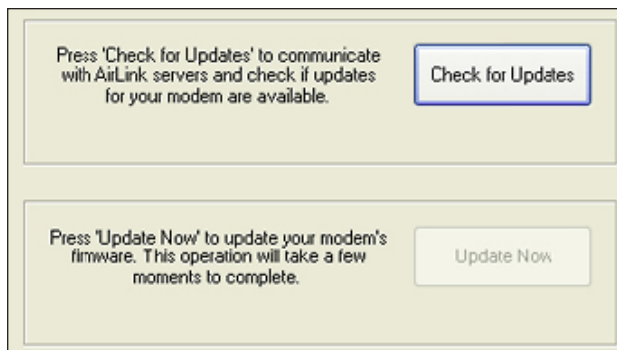
Setup a DUN Connection: Creates a Dial-Up Networking entry for local connection. **You will not need to setup a DUN connection for the C101S.**

After the Setup Wizard connects to the radio it should show the details for your specific model. The image on the Setup Wizard should match the image below. If the incorrect image is displayed, cycle the power on your C101S so the Wizard can attempt to connect again. Click **Next**.



7. Update ALEOS Firmware

AirLink frequently releases updates to the firmware for your radio. These updates can include new features as well as bug fixes. To make sure your radio is at optimal performance, it is recommended to Check for Updates and Update Now.



If the Wizard is unable to obtain ALEOS firmware (such as, if you do not have an Internet connection on the computer you are using to activate the C101S), you can download current ALEOS firmware from AirLink's website and install it separately.

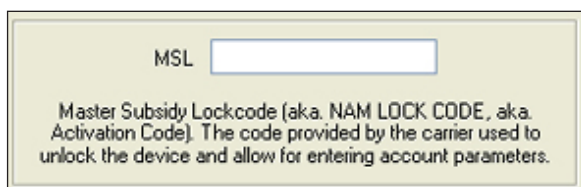


Note: While checking for ALEOS Firmware updates, the Setup Wizard needs to use the Internet connection on your computer to connect to the AirLink server. Your C101S is not connected to the wireless network for this process.

Click **Next** when you are finished updating.

8. Activate the Radio

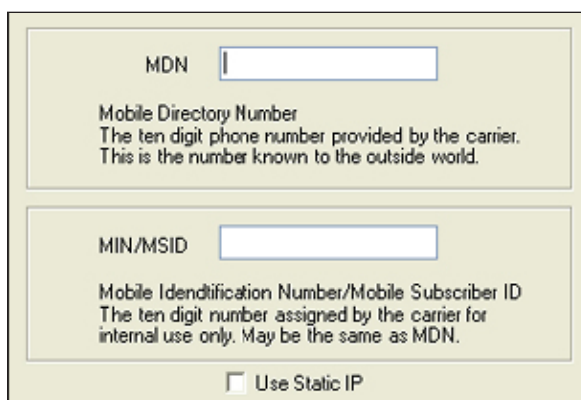
To configure or provision your radio to work on the Sprint network, you will need device activation information provided by Sprint. Fill in the requested information and Click **Next**.



MSL

Master Subsidy Lockcode (aka. NAM LOCK CODE, aka. Activation Code). The code provided by the carrier used to unlock the device and allow for entering account parameters.

- MSL (also known as the **Master Subsidy LockCode**, **MSL** or **OTKSL**, **Activation Code**, or **NAM Lock Code**) is the code needed to enter data into the C101S.



MDN

Mobile Directory Number
The ten digit phone number provided by the carrier.
This is the number known to the outside world.

MIN/MSID

Mobile Identification Number/Mobile Subscriber ID
The ten digit number assigned by the carrier for internal use only. May be the same as MDN.

☐ Use Static IP

- Carrier Mobile Directory Number (**MDN**) and Carrier Mobile Identification Number or Mobile Subscriber ID (**MIN/MSID**), the numbers assigned to your account.

! **Caution:** If your MDN and MIN/MSID are different, you will need to enter both numbers for activation to succeed.

- Select **Use Static IP** if you have an account with Sprint that has a static (never changing) IP address.

Once you have entered all the requested settings, the radio will check your signal strength, RSSI. Click **Next** to begin “provisioning” and setting the configuration into memory. The process may take a few minutes. Progress information will display across the bottom.



Caution: If you have low signal, you may encounter difficulties activating your radio. Try a different location or a different antenna to increase your signal if it is -90 or lower (yellow to red bar).

9. Test Radio Setup

Your radio's connection to the Internet is tested using the Sprint cellular network.



Note: These tests, depending on the strength of your signal, may take a few minutes. Initially, while the tests are being performed, there may be red Xs in the boxes.

The **Status** line will give an indication of the progress of the connection process.

The screenshot shows a window titled "Congratulations. Your modem is properly configured." with the following details:

✓	Channel	160
✓	RSSI	-63
✓	Status	Network Ready
✓	IP Address	166.213.248.243
✓	Ping	www.airlink.com

Green checks in the boxes indicate the tests were successful and your radio is functioning properly. At this point your radio is configured and activated to work on the Sprint network.

10. Sprint Data Link Configuration



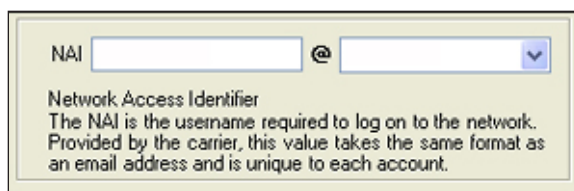
Note: If you did not select **Sprint Data Link Setup** from the task menu, this section of the Setup Wizard will not be displayed during activation, skip to the next section of the User Guide.

Before you start the configuration for Data Link, the radio's connection to the network may be checked. Ensure the radio has been activated before you proceed with the Data Link steps.

Click **Next** after you have filled in each screen's options.

Sprint Data Link is a special account configuration that provides a more secure connection for your C101S. Your C101S authenticates on an exclusive server hosted by your company, a third party, or Sprint. Consult your Feeney Wireless representative for details about Data Link if it's something you need for your account.

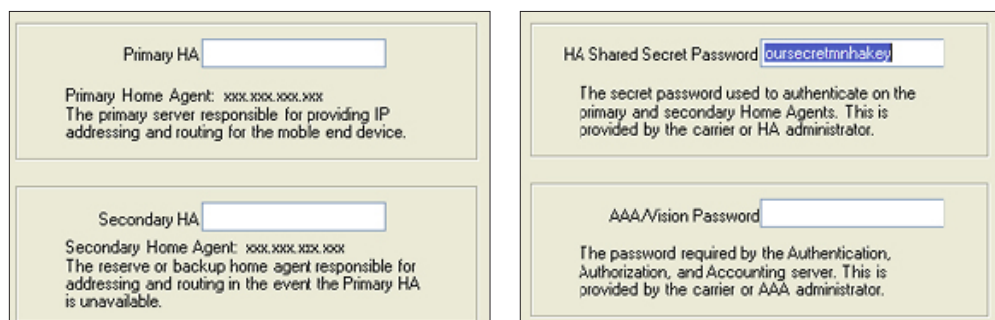
- Enter the user name (in the form of an email address) for the Network Access Identifier (**NAI**).



NAI @

Network Access Identifier
The NAI is the username required to log on to the network. Provided by the carrier, this value takes the same format as an email address and is unique to each account.

- The Primary Home Agent (**Primary HA**) and Secondary Home Agent (**Secondary HA**) are the network servers responsible for IP addressing and routing. [These values may be filled in for you with defaults for Sprint.](#)
- **HA Shared Secret Password** is used for both the PHA and SHA. [This may be filled in for you with a password created for your C101S for Sprint's network.](#)
- The **AAA/Vision Password** is required by the Authentication, Authorization and Accounting server. .



Primary HA

Primary Home Agent: xxx.xxx.xxx.xxx
The primary server responsible for providing IP addressing and routing for the mobile end device.

Secondary HA

Secondary Home Agent: xxx.xxx.xxx.xxx
The reserve or backup home agent responsible for addressing and routing in the event the Primary HA is unavailable.

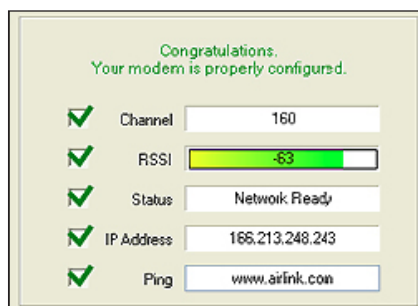
HA Shared Secret Password

The secret password used to authenticate on the primary and secondary Home Agents. This is provided by the carrier or HA administrator.

AAA/Vision Password

The password required by the Authentication, Authorization, and Accounting server. This is provided by the carrier or AAA administrator.

Data Link configuration is completed, the radio's connection to the network will be tested again.



Congratulations.
Your modem is properly configured.

- ✓ Channel
- ✓ RSSI
- ✓ Status
- ✓ IP Address
- ✓ Ping

11. Hardware Installation

Your C101S should be mounted in a position that allows routing for the cables so they are not bent or constricted. The LEDs on the front panel should be visible for ease of operational verification. You should ensure that there is adequate airflow around the C101S but that it's kept free from direct exposure to the elements (sun, rain, etc.).

The integrated mounting bracket on the C101S will allow you to secure your device nearly anywhere, quickly and easily, without the need for a separate bracket.

11.1 Connecting the Antennas

Your C101S will work with most Dual-Band PCS cellular antennas with an SMA male connector. Connect the primary antenna or primary RF cable directly to the antenna connector on the C101S. The antennas must be installed with a minimum of 20 cm between the antennas and with a minimum of 20 cm between each antenna and all persons.

This device has been designed to operate with the antennas listed below, and having a maximum gain including cable loss of 5.1 dBi in the 800 MHz Cellular Band and 4.15 dBi in the 1900 MHz PCS band. Antennas not included in this list or having a gain greater than these values are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

- Antenna Plus Millenium Series - AP8500
- MAXRAD® Low Profile Series - BMLPV1700
- MAXRAD® - MDBM800/1900
- Antenex® Phantom® Series - TRA860B/17103
- TESSCO Low Profile - 370846
- Radial Larsen Tri-Band - GPSCWCP

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.

11.2 Connecting Power

Your C101S uses a custom 12VDC power harness cable which connects directly to the vehicle power supply.

The power cable positive lead should be connected to the fuse box or power source positive terminal. The power cable negative lead should be connected to the battery or power source negative terminal.



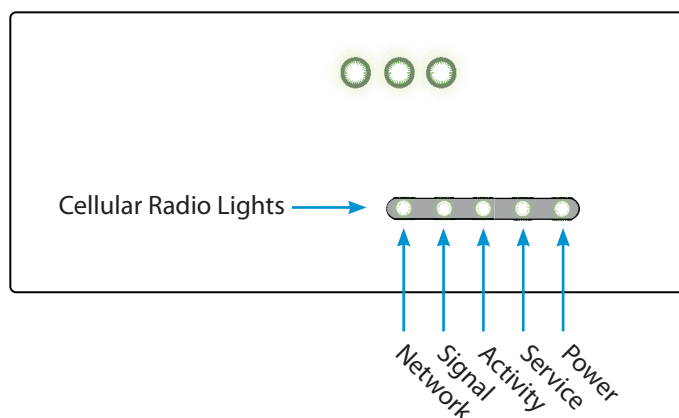
Note: When using a DC power source (such as a car battery or solar cell), Feeney Wireless recommends placing a fuse (3-5 Amp) on the line close to the power source to protect your C101S from possible surges due to shorts or other line issues.

11.3 Connecting the C101S to a computer or other device

Your C101S serial port can be connected directly to most computers or other devices using a standard straight through cable. If you have a DCE device, you will need a null modem or null modem cable.

11.4 C101S Radio Indicator Lights

When your C101S is connected to power and an antenna, there is a specific pattern to the lights to indicate its operational mode. The lights located at the bottom right of the C101S indicate radio activity. The lights located at the top of the C101S indicate wireless router activity.



Network - Indicates a successful connection to the cellular network with an IP address given and a channel acquired.

Signal - Light shows the strength of the signal and may be nearly solid (strong signal) or flashing (weaker signal).

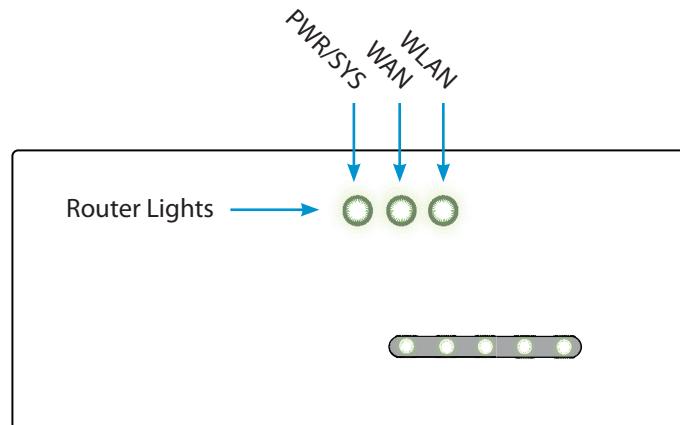
Activity - Lights will flash as data is transferred to and from the C101S on the remote network.

Service - Indicates when the connection is EV-DO. Unlit indicates 1x RTT.

Power - Indicates the power adapter is connected and there is power getting to the C101S.

11.5 C101S Router Indicator Lights

The PWR/SYS LED blinks amber while performing system testing and then turns solid green if the testing is successful. The WAN LED turns off if it is properly connected.



PWR/SYS - A solid amber light indicates that the C101S router is in the process of booting. A blinking amber light indicates that the unit is resetting to factory defaults. A solid green light indicates that the device is receiving power.

WAN - If the light is off, the WAN connection is not ready, or has failed. A blinking light indicates that the C101S is sending/receiving data. A solid light indicates a successful WAN connection.

WLAN - If the light is off, the WLAN connection is turned off. A blinking light indicates that the WLAN is sending/receiving data. A solid light indicated that the WLAN is active.

12. Set Up Your Computer's IP Address

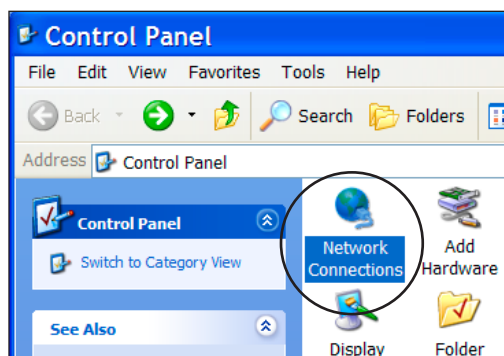
The C101S is already set up to assign your computer an IP address. Use this section to set up your computer to receive an IP address and assign it an IP address in the 192.168.10.2 to 192.168.10.254 range with a subnet mask of 255.255.255.0. This is necessary to ensure that your computer can communicate with your C101S.

Your computer must have a wireless network card and TCP/IP installed. TCP/IP should already be installed on computers using Windows NT/2000/XP, Macintosh OS 7 and later operating systems. Refer to the *Setting Up Your Computer's IP Address* appendix for other operating systems.

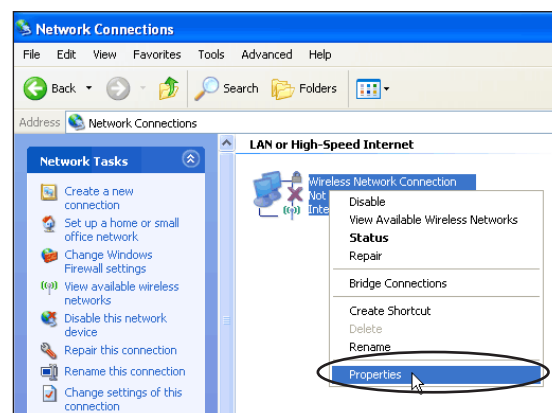
12.1 Windows 2000/NT/XP

The following example figures use the default Windows XP GUI theme.

1. Click **start** (**Start** in Windows 2000/NT), **Settings, Control Panel**.
2. In the **Control Panel**, double-click **Network Connections (Network and Dial-up Connections** in Windows 2000/NT).
3. Right-click **Wireless Area Connection** and then **Properties**.

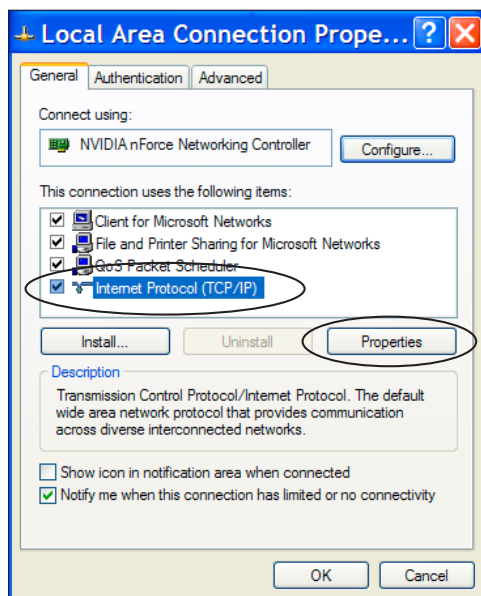


Control Panel



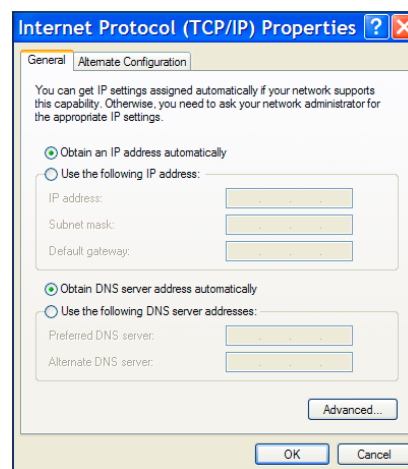
Wireless Network Connection

4. Select **Internet Protocol (TCP/IP)** and then click **Properties**.



Local Area Connection Properties

5. Select **Obtain an IP address automatically** to get an IP address assigned from the DHCP server in the C101S broadband router.
6. Select **Obtain DNS server address automatically**.
7. Click **OK**.



Internet Protocol Properties

8. Click **OK** to close the **Internet Protocol (TCP/IP) properties** window.
9. Click **Close (OK in Windows 2000/NT)** to close the **Wireless Network Connection** window.
10. Close the **Network Connections** window (**Network and Dial-up Connections** in Windows 2000/NT).

12.2 Checking /Updating Your Computers IP Address

1. In the computer, click **Start, (All) Programs, Accessories**, and then **Command Prompt**.
2. In the **Command Prompt** window, type "**ipconfig**" and then press **ENTER** to verify that your computer's static IP address is in the correct subnet (in the range between 192.168.10.2 and 192.168.10.254 if using the default C101S LAN IP address). Alternatively, to have the C101S assign your computer a new IP address (from the IP pool), make sure your C101S is turned on, type "**ipconfig/release**" and then press **ENTER** to release the previous IP address settings. Then type "**ipconfig/renew**" and press **ENTER** to get a new IP address.

12.2 Testing the Connection to the C101S

```
C:\>ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:

Reply from 192.168.10.1: bytes=32 time=10ms TTL=254
Reply from 192.168.10.1: bytes=32 time<10ms TTL=254
Reply from 192.168.10.1: bytes=32 time<10ms TTL=254
Reply from 192.168.10.1: bytes=32 time<10ms TTL=254

Ping statistics for 192.168.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 10ms, Average = 2ms

C:\>
```

1. Click **Start, (All) Programs, Accessories**, and then **Command Prompt**.
2. In the **Command Prompt** window, type “ping 192.168.10.1” followed by a space and the IP address of the C101S (192.168.10.1 is the default).
3. Press **ENTER**.

13. Configuring Your C101S

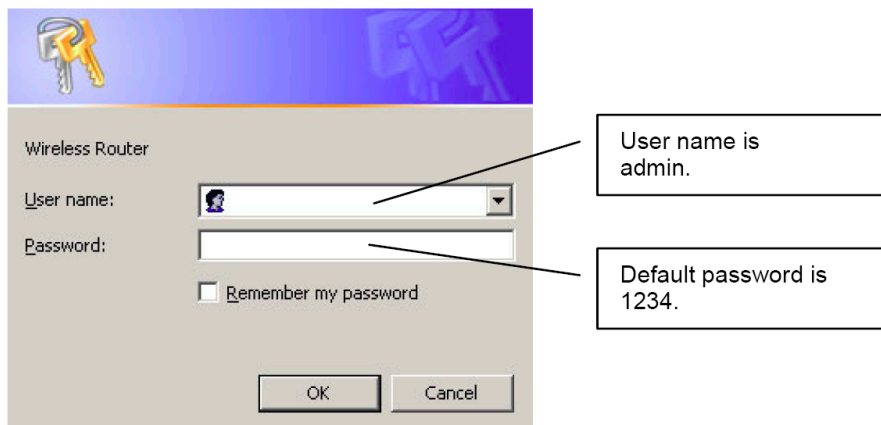
Choose one of these methods to access and configure the C101S. This Quick Start Guide shows you how to use the web configurator only.

13.1 Accessing Your C101S Via Web Configurator

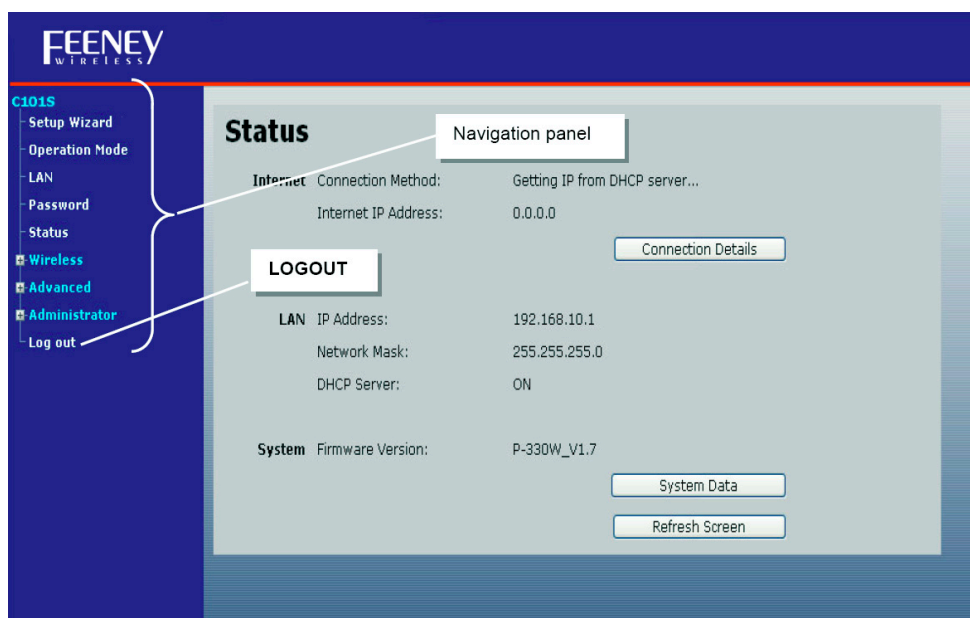
1. Launch your web browser. Enter “192.168.10.1” as the web site address.



2. A window will pop up asking you for a user name and password. The user name is **admin**. Enter the password in the password field (default is 1234). Click **OK**.



You should now see the web configurator **Status** screen.



3. Click a link on the left in the navigation panel to configure that C101S feature.
4. Click **Log Out** when you have finished a C101S management session. The C101S automatically logs you out if it is left idle for five minutes; press **ENTER** to display the **Login** screen again and then log back in.

13.2 Additional Information

☐ Disable Access Point

Band:

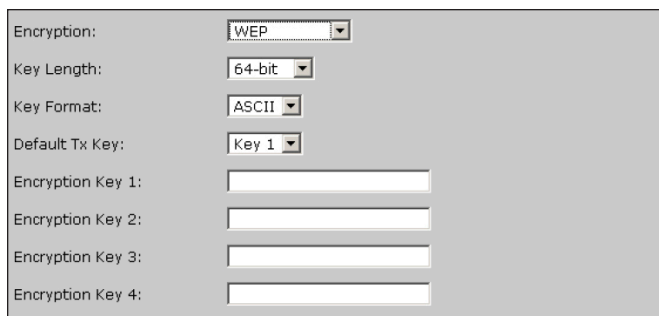
SSID:

Channel Number:

Band allows you to determine which 802.11 standards you want to allow to connect to your C101S. 802.11g is faster, while 802.11b usually offers better range and noise tolerance.

SSID is a unique name to identify the C101S in the wireless LAN. Enter a descriptive name so you can easily recognize your network from one of a neighbor.

The wireless stations and the C101S must see the same SSID, channel ID and WPA-PSK (if WPA-PSK is enabled), WEP encryption key (if WEP is enabled) for wireless communication.



Encryption:

Key Length:

Key Format:

Default Tx Key:

Encryption Key 1:

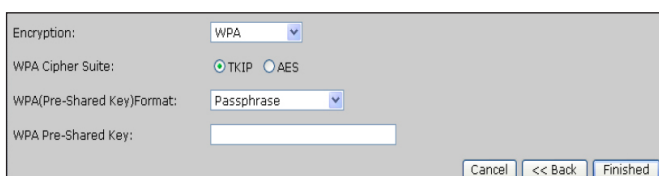
Encryption Key 2:

Encryption Key 3:

Encryption Key 4:

WEP (Wired Equivalent Privacy) -

encrypts data frames before transmitting over the wireless network. The higher the WEP Encryption, the higher the security but the slower the throughput. WEP security should only be used if you have older devices on your network that are not compatible with WPA or WPA2.



Encryption:

WPA Cipher Suite: ☒ TKIP ☐ AES

WPA(Pre-Shared Key)Format:

WPA Pre-Shared Key:

WPA Pre-Shared Key- WPA offers a higher level of protection for your wireless network than WEP. You can choose to either enter in a Hex key, or use a passphrase to generate the pre-shared key. We suggest using a passphrase.

14. Technical Support

If you encounter problems with the operation of your C101S, please contact the Feeney Wireless technical support staff. Support is available Monday through Friday from 8 AM to 5 PM Pacific Standard Time.

Please have the following information ready before you contact us for technical support:

1. Serial Number
2. Date that you received your device.
3. Brief description of the problem.

Support E-mail	support@feeneynw.com
Telephone	(888) 458-0624
Web Site	www.feeneywireless.com
Physical Address	Feeney Wireless, LLC 1299 Ocean St. Eugene, OR 97402
Mailing Address	P.O. Box 50415 Eugene, OR 97405