



User Manual

High Power Wireless Ethernet Converter WLI-TX4-G54HP



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Congratulations on your purchase! Your new High Power Wireless Ethernet Converter allows you to connect any device with an Ethernet port to a wireless network. AOSS makes for effortless setup and our Turbo G High Power technology gives superb range and speed.

Contents

- Wireless Ethernet Converter
- Ethernet Converter Utility CD-ROM
- 7ft. Ethernet Cable
- AC Adapter
- Quick Setup Guide
- Warranty Statement

If any items are missing, please contact the reseller from whom you purchased this product.

System Requirements

- Desktop or Notebook computer with an RJ-45 Ethernet port (for configuration)
- Web Browser (Firefox 1.0 or later, Mozilla 5.0 or later, or IE 5.0 or later)
- 802.11b or 802.11g access point (Infrastructure Mode) OR a different computer with and 802.11b or 802.11g wireless adapter (Ad-hoc Mode)

Screw the antenna into the top or side of your Wireless Ethernet Converter as shown. You may also attach the optional stand if you wish. For best performance, orient the antenna to point straight up. If you want to substitute a different 2.4GHz antenna, make sure that it has the correct RP-SMA connector.



Plug the A/C adapter into an A/C power source and plug the connector into the back of the Ethernet Converter. It will take about 30 seconds to boot up.

If your Wireless Router/Access Point supports AOSS, then AOSS can configure your wireless network for you. To configure your network with AOSS:

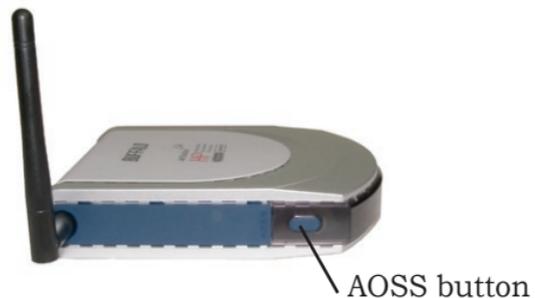
- Confirm that the Wireless Router/Access Point and the Ethernet Converter are both powered up.
- Hold in the AOSS button on the Wireless Router/Access Point for 3 seconds.
- Hold in the AOSS button on the Ethernet Converter for 3 seconds.

AOSS will take about a minute to configure your wireless network. When finished, the AOSS LEDs on both the Wireless Router/Access Point and the Ethernet Converter will stop blinking and stay lit. You now have a secure connection!

NOTES: If AOSS is used, then any non-AOSS wireless client devices in your network will have to be manually re-configured to connect to the Router/Access Point in AOSS mode; please consult your Router/Access Point documentation for more information on adding non-AOSS devices.

AOSS configures your SSID, encryption type, wireless channel, and encryption key, and makes a secure connection between your wireless components. You may still need to run your router's configuration utility to configure your internet connection.

If AOSS does not finish properly, power cycle both the Router/Access Point and the Ethernet Converter and attempt the AOSS process again. AOSS works best when the router and the Ethernet Converter are physically close. You can always move them further apart when configuration is complete.



If your wireless router/access point doesn't support AOSS, you'll need to configure the access point manually. There are two ways to do this: you can use the Ethernet Converter Manager software if you have a Windows PC on the network (98/ME/2000/XP only), or you may use a web browser. Web browser configuration may be done with any computer running a recent web browser, including Macintosh and Linux machines. Skip to *page 11* for web based configuration.

Configuration with Ethernet Converter Manager

If you have a Windows 98/ME/2000/XP machine with a CD-ROM drive available on your computer network, the Ethernet Converter Manager makes it simple to configure the Ethernet Converter. The following steps will guide you through configuring the Ethernet Converter via the Ethernet Converter Manager.

Connect one of the Ethernet Converter's LAN ports to an open port on your network's router, switch or hub with the included network patch cable. If there are no ports available, you can temporarily remove a computer or other connected device and plug the Ethernet Converter to that port. You can plug the Ethernet Converter directly to the configuring computer, but will have to configure settings manually as described on *page 17*.

Once the network cable has been plugged in, plug the Ethernet Converter's AC Adapter into an available power outlet. Then attach the power connector to the back of the Ethernet Converter. The boot up process takes 30 seconds and is complete when both the Wireless and Ethernet LEDs are lit.

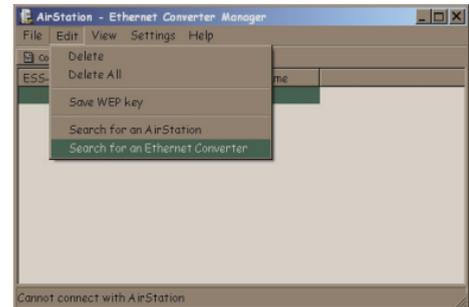
Return to the PC designated for configuration and insert the included Ethernet Converter CD-ROM into the PC's CD-ROM drive.

The Ethernet Converter Utility should launch automatically. If it does not, browse your CD-ROM drive in Windows and run the **setup.exe** program.

Click on *Ethernet Converter Manager*.



The Ethernet Converter Manager software will run. If the search doesn't begin automatically, select the *Search for an Ethernet Converter* option from the *Edit* drop down menu.

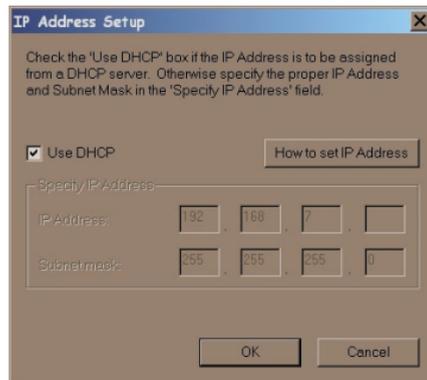
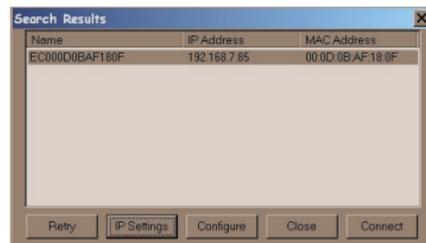


The Ethernet Converter Manager will search for all Buffalo Ethernet Converters on your network. The process usually takes less than one minute. Once completed, the *Search Results* window will appear.

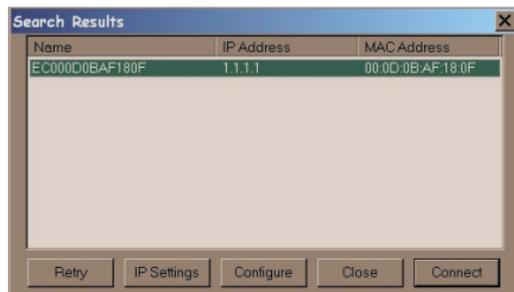
Search Results will list all Buffalo Ethernet Converters on the network. If there is more than one Ethernet Converter in the list, select the one you would like to configure. Press the *IP Settings* button to continue configuration.

The *IP Address Setup* window will open. Check the box next to *Use DHCP* and press the *OK* button. The Ethernet Converter will reboot; this process may take as long as a minute. The Ethernet Converter Manager will then re-scan the network for Ethernet Converters.

NOTE: If you want to give your Ethernet Converter a static IP address, than you can skip checking *Use DHCP* and enter your own IP Address and Subnet mask in the cooresponding fields. If using a static IP address, it is recommended to pick one inside your existing network's subnet.



Search Results will appear again. If more than one Ethernet Converter is present, select the proper Ethernet Converter from the list. Then press the *Configure* button.



The Ethernet Converter Manager will connect you to the Ethernet Converter's web based configuration tool. You will be prompted for a username and password.

By default, the username is *root* and there is no password.

After entering the user name, press the *OK* button. Please skip to *page 13* to continue configuration.



You may also enter the Web-based Configuration Tool without using the software. This may be necessary to configure the converter without the use of a Windows PC. Use this method with Linux, Macintosh, other other non-Windows PCs to access the Web-based Configuration Tool.

Refer to your operating system documentation on how to configure a Static IP address. The Ethernet Converter has an IP address of 1.1.1.1 by default. You'll need to configure the computer to be on the same subnet; an IP address of 1.1.1.2 is recommended for the computer.

With the included network patch cable, connect one of the Ethernet Converter's LAN ports to an open Ethernet port on a router, switch, or hub on your network. Alternately, you can plug the Ethernet Converter directly to the configuring computer's Ethernet port.

Once the network cable has been plugged in, plug the Ethernet Converter's AC Adapter into an available power outlet. Then attach the power connector to the back of the Ethernet Converter. The boot process takes less than a minute and is completed when both the Wireless and Ethernet lights are lit.

Once your computer has a Static IP address of 1.1.1.2, open your web browser and enter *1.1.1.1* by typing it into the Address field and then pressing *Enter* on your keyboard.



You will be prompted for a username and password. By default, the username is *root* and there is no password.

After entering the user name, press the *OK* button.



The Web Based Configuration Tool lets you change the Ethernet Converter's configuration. Through Web Based Configuration, you can change the wireless network the Ethernet Converter is associated with, the IP address of the Ethernet Converter, and other important settings.

After logging in on the previous pages, you will be greeted by the main configuration page. This page quickly shows you what network the Ethernet Converter is connected to as well as allowing you to search for available networks.

The first step in Web Based Configuration should be to search for an available wireless network. To do this, press the *Search* button in the *SSID (Network Name)* table.

After pressing the *Search* button, the *Search for SSID* program will find any networks in your area that are broadcasting their SSIDs. Select the wireless network that you would like to connect to and press the *Select* button.



Search for SSID

Select	SSID (Network Name)	Wireless Channel	Signal Strength	Encryption	Wireless Mode	Network Type
<input type="radio"/>	FOOCA	3	STRONG	YES	802.11g	Infrastructure

NOTE: After selecting a wireless network, you must press the 'Apply Settings' button on the 'Wireless Settings' page. If you do not apply the settings, the Ethernet Converter will not connect to the selected wireless network.

Select Retry Cancel

After selecting a wireless network, you will be returned to the main Web Based Configuration page.



If the wireless network you are attempting to connect to is not broadcasting its SSID, then you will be required to manually enter the SSID into the SSID field. After the field is populated with the proper SSID, press the *Apply Settings* button.

If encryption is enabled on the wireless network you've selected, you will need to enter the encryption key (see *page 15*).

Click *Refresh* to see the current status of your wireless connection. *SSID (Network Name)* will be populated now (see *pages 13-14* if it isn't).

Below it, *Wireless Network Type* may be set to *Infrastructure* if you're connecting the Wireless Ethernet Converter to a router or access point, or *Ad hoc* if you're connecting it to another wireless client.

Encryption Mode should be set to use the same type of encryption as the other wireless devices on your network. The Ethernet Converter supports WEP128, WEP64, TKIP, and AES encryption. AES is highly recommended if all your other wireless devices support it.

To the right of the encryption dropdown is the field where you enter your *encryption key*. *SSID*, *Encryption Mode*, and *Encryption Key* must be set exactly the same in all of your wireless devices, or they will not be able to communicate with each other.

Check your router/access point's documentation if you don't know what the *SSID*, *Encryption Mode*, and *Encryption key* are on your network.



Once you've configured these basic settings (especially *SSID*, the *Encryption Mode*, and the *Encryption Key*), the Ethernet Converter should be able to connect to your other wireless devices. To continue configuring advanced settings, please skip to the next page.

Disconnect the Ethernet Converter from the wired network connection and move it to its desired location.

You may connect four wired Ethernet devices to the Ethernet Converter's LAN ports. Connected devices may include XBoxes, PS2s, Home Theater equipment, switches, hubs, or another computer system. Plug the AC Adapter into a nearby power outlet and connect it to the Ethernet Converter. Power cycle any devices that are connected to the Ethernet Converter.

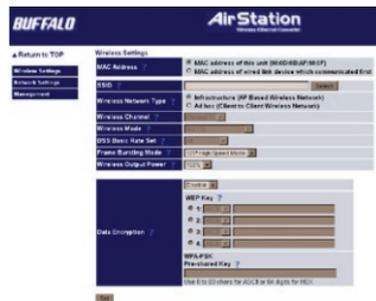
If you set a static IP address on your computer on *page 11*, then restore the computer's IP settings to *obtain an IP Address automatically*.

Congratulations! Your Ethernet Converter is set up. If you need to configure your Ethernet Converter further, use the Ethernet Converter Search Utility and press the *Configure* button (*page 8*). Turn to the next page for *Advanced Settings*.

Most users will never need to change any settings for their Wireless Ethernet Converter besides the basic ones in the main configuration window, covered on *pages 13-15*. If you're one of the exceptions, you may access *Advanced Settings* by pressing the blue *Advanced* button in the bottom right corner of the configuration page.



This is the *Advanced Settings* page. On the left, you may choose from Wireless Settings, Network Settings, or Management. When the page first opens, it's at Wireless Settings. Changes on the Advanced Settings page are not applied until the *Set* button is pressed.



MAC Address - By default, the Ethernet Converter transmits its own MAC address, but you may change this so that it transmits the MAC address of the first device plugged into it to transmit a data packet.

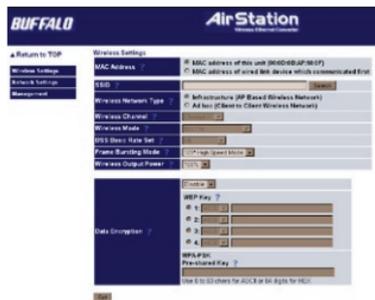
SSID - In the SSID field, enter the SSID name of the wireless network that the Ethernet Converter is to connect with. Use the same SSID as your router/access point. You may find available broadcasting SSIDs by pressing the *Search* button.

Wireless Network Type - Choose between *Infrastructure* (Access Point Based) or *Ad-hoc* (Client to Client).

Wireless Channel - The channel will be automatically selected in Infrastructure networks. For Ad-hoc networks, both clients must be set to the same channel.

Wireless Mode - The wireless mode only applies to Ad-hoc connections. If the Ethernet Converter is making an Ad-hoc connection with an 802.11b client, then select *802.11b* from the drop down menu. If an 802.11g client is connecting to the Ethernet Converter then select the *Auto-802.11g-802.11b* option.

BSS Basic Rate Set - The basic rate set only applies to Ad-hoc connections. Select the proper rate set for the Ad-hoc client the Ethernet Converter is going to associate with. Older routers may require that you reduce the BSS Basic Rate set to *Default(11b)*. If you are unsure of the correct setting, try *Default*.



Frame Bursting Mode - Frame Bursting technology allows for quicker wireless network speeds by reducing the overhead for each wireless packet. If your access point supports it, *125* High-Speed Mode* offers the best overall performance of the frame bursting modes. You may leave this set to the *125* High Speed Mode* at all times; if a compatible access point is not available then the device will operate as a standard 802.11g device.

Wireless Output Power - The wireless output power setting changes the power of the Ethernet Converter's internal radio. Reducing the output power can often reduce interference with other devices. You should leave the output power set at 100% unless you want to reduce range or interference with other 2.4 GHz devices is apparent.

Data Encryption - Select WEP 64, WEP 128, TKIP, or AES encryption from the dropdown. If WEP is selected, then a WEP key or series of WEP keys must be entered into the WEP key field(s). Please select whether the specific key is ASCII or HEX from the pull down list next to the key fields. If TKIP or AES is used, then enter the pre-shared key in the WPA-PSK field.

Automatic Assignment (DHCP Server) - This setting allows the Ethernet Converter to obtain its IP address automatically from a DHCP server on the network.

Manual Assignment - This assigns the Ethernet Converter a specific ("Static") IP address. If a Static IP address is selected, you must enter a Subnet Mask as well.

NOTES: To configure the Ethernet Converter in the future, a user must both know its IP address, and, be on the same subnet. Be careful when changing the Ethernet Converter's IP address!

If changes to the Ethernet Converter's IP address make it difficult for you to access the web-based configuration utility, remember that you can use the Ethernet Converter Management software to reconfigure or reset DHCP (see pages 8-9) or a Static IP address. If the Ethernet Converter's IP address has reverted to the default 1.1.1.1, you may manually configure your computer to an IP address on the same subnet, such as 1.1.1.2, allowing it to connect to the Ethernet Converter (see pages 11-12). Don't forget to change your computer's IP address back when you've finished configuring the Ethernet Converter.

The IP Address does not need to be in the range of the DHCP server's scope to successfully pass DHCP requests to network clients behind the Ethernet Converter.



System Information - This page contains a summary of the Ethernet Converter's settings. Settings cannot be changed from this page. If the Ethernet Converter is obtaining its IP address from a DHCP server, then release and renew buttons will be present at the bottom of the page. Releasing the IP address will make the Ethernet Converter impossible to configure without re-initializing the device or using the Ethernet Converter Manager.

Name and Password - These settings affect the naming and password protection of the Ethernet Converter.

Ethernet Converter Name - The Ethernet Converter name is a quick reference name for the Ethernet Converter. It is recognized by the Ethernet Converter Manager.

Administrator Password - The administrator password is used to protect the Ethernet Converter from unwanted configuration changes. Setting the password protects configuration changes from both web-based configuration and the Ethernet Converter Manager.

The screenshot shows the 'System Information' page of the Buffalo AirStation web interface. The page has a dark blue header with the Buffalo logo and 'AirStation Wireless Ethernet Converter'. A sidebar on the left contains navigation links: Return to TOP, Wireless Settings, Network Settings, Management, System Information (selected), Name & Password, Initialization/Reboot, and Firmware Update. The main content area displays system information in a table:

Model & Version	WL12-TX1-G54 Ver.2.21
TX1 Name	ECC0274DA2716D
MAC Address	00:07:40:42:71:6D
Wireless Firmware	WL12SP1-G54 Ver. 3.31.13.0
Device MAC Address	00:50:5A:05:09:90
SSID	FOCCA
Wireless Channel	3
Network Type	Infrastructure
AP MAC Address	00:07:40:42:00:E3
Signal Strength	100% (54Mbps)
DHCP Client	(Enabled)
DHCP Server Address	192.168.7.2
IP Address	192.168.7.162
Subnet Mask	255.255.255.0

Below the table, there are buttons for 'Release' and 'Renew' next to the text 'The IP Address has been assigned by a DHCP server.' Below that, a note states: 'If the IP Address is released, then communication with the Ethernet Converter will be halted. The IP Address will have to be reconfigured via AOS1 or the Ethernet Converter Manager afterwards. If AOS1 or the Ethernet Converter Manager is unavailable, the Ethernet Converter can be accessed by its default IP Address of 1.1.1.1.'

The screenshot shows the 'Name and Password' page of the Buffalo AirStation web interface. The page has a dark blue header with the Buffalo logo and 'AirStation Wireless Ethernet Converter'. A sidebar on the left contains navigation links: Return to TOP, Wireless Settings, Network Settings, Management, System Information, Name & Password (selected), Initialization/Reboot, and Firmware Update. The main content area contains the following fields:

- Ethernet Converter Name**: Input field containing 'ECC0274DA2716D'.
- Administrator Name**: Input field containing 'root (Cannot be Changed)'.
- Administrator Password**: Two input fields for password and confirmation, with '(Confirm Password)' text next to the second field.

Below the fields, there are two checkboxes under 'Configuration Limitations':

- Prohibit Configuration from Wireless Clients
- Prohibit Configuration from Wired Clients

A note below the checkboxes reads: '* If both configuration limitations are set, then further administration is impossible. The device must be re-initialized to re-gain access to the configuration pages.'

At the bottom, there is an 'Apply Settings' button.

Configuration Limitations - Limits what kind of clients may configure the Ethernet Converter. Checking *Prohibit Configuration from Wireless Clients* prevents changes to configuration by clients that are not connected directly to the Ethernet Converter. Checking *Prohibit Configuration from Wired Clients* prevents configuration changes being made by any client that is directly connected to the Ethernet Converter's LAN ports. Checking both boxes makes all further configuration impossible. The Ethernet Converter must then be initialized before any changes to configuration can be made. Be careful with these checkboxes!

Initialization and Reboot - This page contains settings that restart and re-initialize the Ethernet Converter.

Initialize - Initializing the Ethernet Converter restores the Ethernet Converter's settings to default settings. This will erase all configuration changes made, including all passwords. All configuration will have to be redone as though the product were brand new. You may also initialize the Ethernet Converter with the INIT button; see *page 24*.

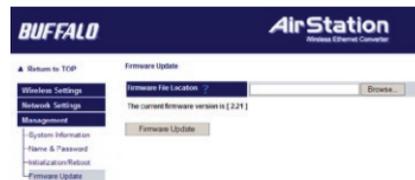
Restart - Restarting the Ethernet Converter performs a simple reboot similar to what would occur if the power was cycled off/on the Ethernet Converter. No settings are lost in this case. It will take about 30-60 seconds to reboot. The reboot is complete when the wireless LED is continuously lit.



Firmware Update - This page allows you to update the Ethernet Converter's Firmware. This involves downloading a newer firmware from the Buffalo Technology website and using this page to install it on your Ethernet Converter. New firmware files contain new software code that adds bug fixes, additional features, increased performance, and revised interfaces.

To update the firmware, press the *Browse* button and search for the downloaded firmware file, which you've probably downloaded to your desktop. Once you've located it, press the *Firmware Update* button. The firmware update process takes about 90 seconds. Usually, your settings will be retained; you will probably not have to redo any configuration.

Please visit <http://www.buffalotech.com>, select your region, and visit the support section to check for product updates.



Initializing the Ethernet Converter returns it to default settings. This might be useful if you cannot access configuration settings, have lost the password to the Ethernet Converter, or desire to return the settings to the default factory settings.

To initialize the device, simply hold in the black *INIT* button on the side of the Ethernet Converter for 5 seconds or until the DIAG light glows red. Allow a minute for the initialization to complete. Afterwards, refer to the Quick Setup Guide or the beginning of this User Manual to reconfigure the Ethernet Converter.



FCC Compliance Statement - 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.

R&TTE Compliance Statement - This equipment complies with all the requirements of the DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of 9 March 1999 on radio equipment and telecommunication terminal equipment and the mutual recognition of their conformity (R&TTE).

** 54 Mbps is the IEEE 802.11g standard theoretical maximum data transfer rate including overhead. Actual wireless network throughput is limited by environmental and system factors and will be less.*

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*Calls cost 8.5p per minute

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Monday - Friday (GMT)

9:00 AM - 6:00 PM Monday-Thursday

9:00 AM - 4:30 PM Friday

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For each individual product and revision, please send one individually packaged self addressed padded CD shipping envelope, containing a blank CD-R to the following address:

Buffalo Technology USA Inc.
4030 W. Braker Lane Suite 120
Austin, TX 78759
Attn. GPL Department

Within the envelope containing the self addressed padded CD shipping envelope, please include a bank draft or money order for \$20 (USD) (Made out to: Buffalo Technology) to cover our handling fee, postage and CD preparation. The CD-R should have the name of the product and revision number clearly written on the actual CD-R (not on the insert).

We do not send GPL source in bulk on a DVD. And order confirmation is not required by the GNU General Public License.

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Within the envelope containing the self addressed padded CD shipping envelope, please include a bank draft or money order for €20 (Euro) (Made out to: Buffalo Technology) to cover our handling fee, postage and CD preparation. The CD-R should have the name of the product and revision number clearly written on the actual CD-R (not on the insert).

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