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CS-64

Administration & Setup Guide



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1.0 Product Overview

1.1 Product Description

The CS-64 is a four channel multicast endpoint device capable of transmitting or receiving on up to (4) multicast groups. The CS-64 supports features such as Hands free operation, headset or handset connectivity, foot switch operation, syslog for device management and utilizes Linux as its core OS.

1.2 Product features

- **Display** - Provides information such as device name, user name and line/channel assignments as defined by unit administrator.
- **Volume Control** - Each channel has individual volume control so users can set levels to their liking.
- **Loud Speaker** - Each CS-64 is equipped with a built in loud speaker. Administrators have access to master volume control via web page configuration. Audio for all lines is mixed.
- **LED's** - LED's on the front panel provide visual indication of audio activity for its respective channel.
- **PTT Buttons** - Buttons on front panel serve primarily as PTT (Push to Talk) for the respective channel. A single press & release will activate Hands Free mode for the respective channel.
- **Ethernet Hub** - Each CS-64 is equipped with 2 Ethernet ports for connecting other IP devices such as PC, IP phone or adding additional CS-64's. Port 2 is PoE compliant for powering the device from a PoE Ethernet switch.
- **Local Power** - Each CS-64 is equipped with a coaxial power socket for connecting an external 48VDC power supply in the event PoE is not available.
- **Handset/Headset** - The CS-64 can be equipped with the option to connect either a mono headset or PTT handset. Headset connector is standard 1/8" stereo connector located on the right side of the device. Handset connector is RJ-25 located on the back of the device.
- **Footswitch** - The CS-64 can be equipped with an optional foot switch for PTT activation. Footswitch will connect to the handset port on back of unit. Pins 1 & 6 are used for contact closure input to activate PTT.
- **Gooseneck Mic** - The CS-64 is typically equipped with a close talking gooseneck microphone. For listen only models this option is removed.

2.0 Administration

2.1 Login

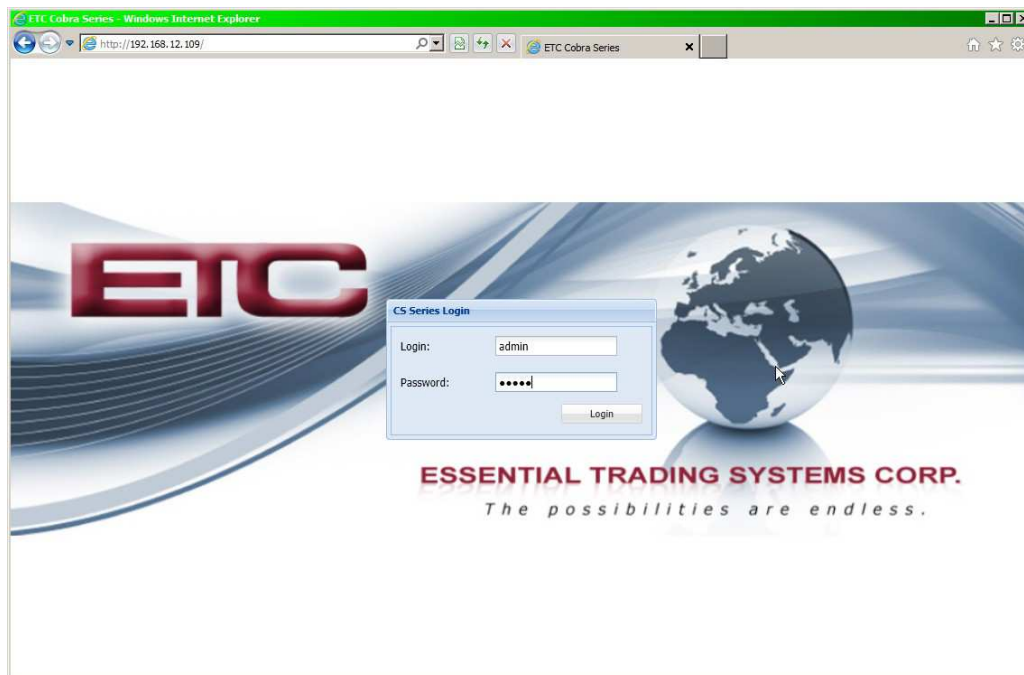
The CS-64 is configured via browser interface. CS-64's ship set to DHCP as default. Upon connection to appropriate network the device will automatically acquire an IP address via DHCP. This address will be indicated on the device's display during boot up.

ETC recommends using Chrome or Firefox to ensure best browsing experience. IE9 and above can be used as well.

Once the IP address has been determined, open a browser from a PC that is networked with this machine. Type the IP address into the URL bar of the browser and press enter. The CS-64 Login screen is shown in Figure 1.

Default Username is: **admin**, default password is: **admin**. Upon logging in, administrative login credentials can be changed to ensure security of system configuration.

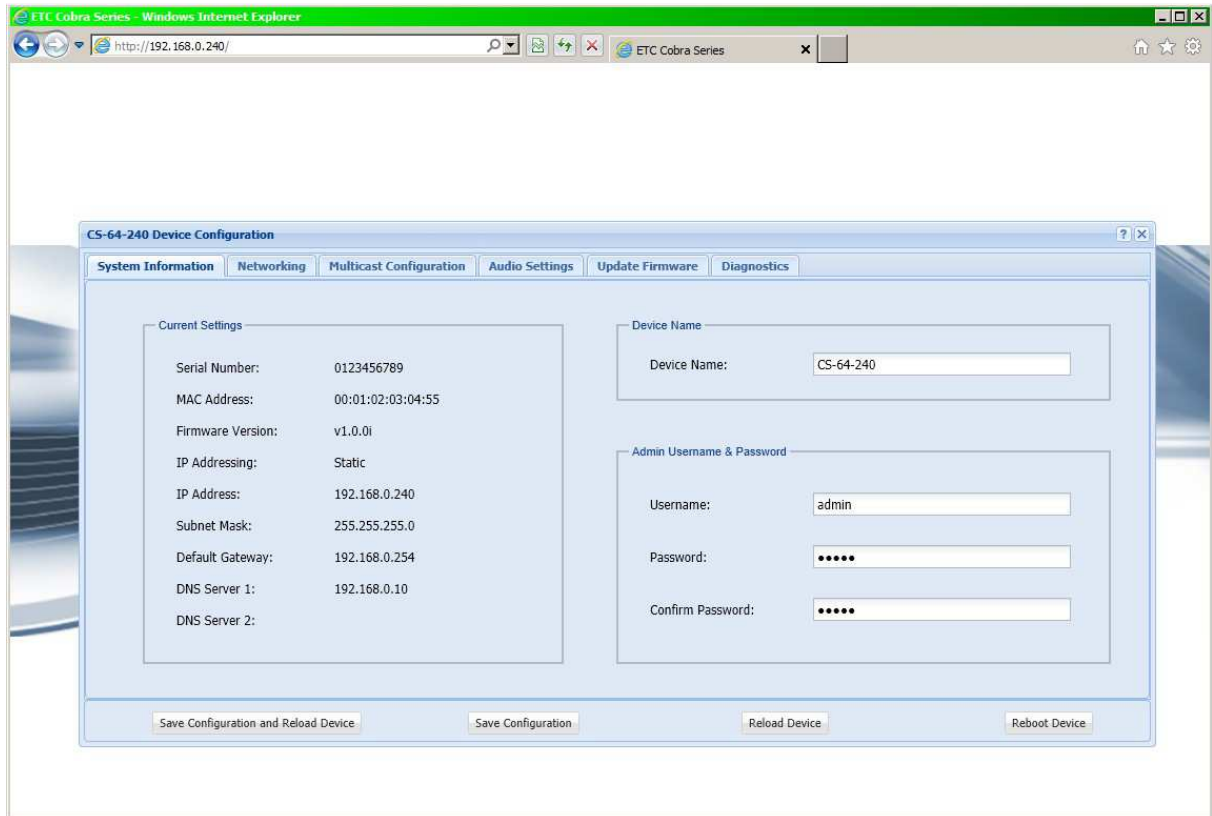
Figure 1



2.2 System Settings

After logging in, you are brought to the System Information page where administrative functions of the CS-64 are presented as tabs across the top of the window. See Figure 2.

Figure 2



2.3 Menu Options

The menu selections are displayed as tabs across the top of the web page. Each section will be explained in detail, later in the guide. Figure 3 shows the options available.

Figure 3

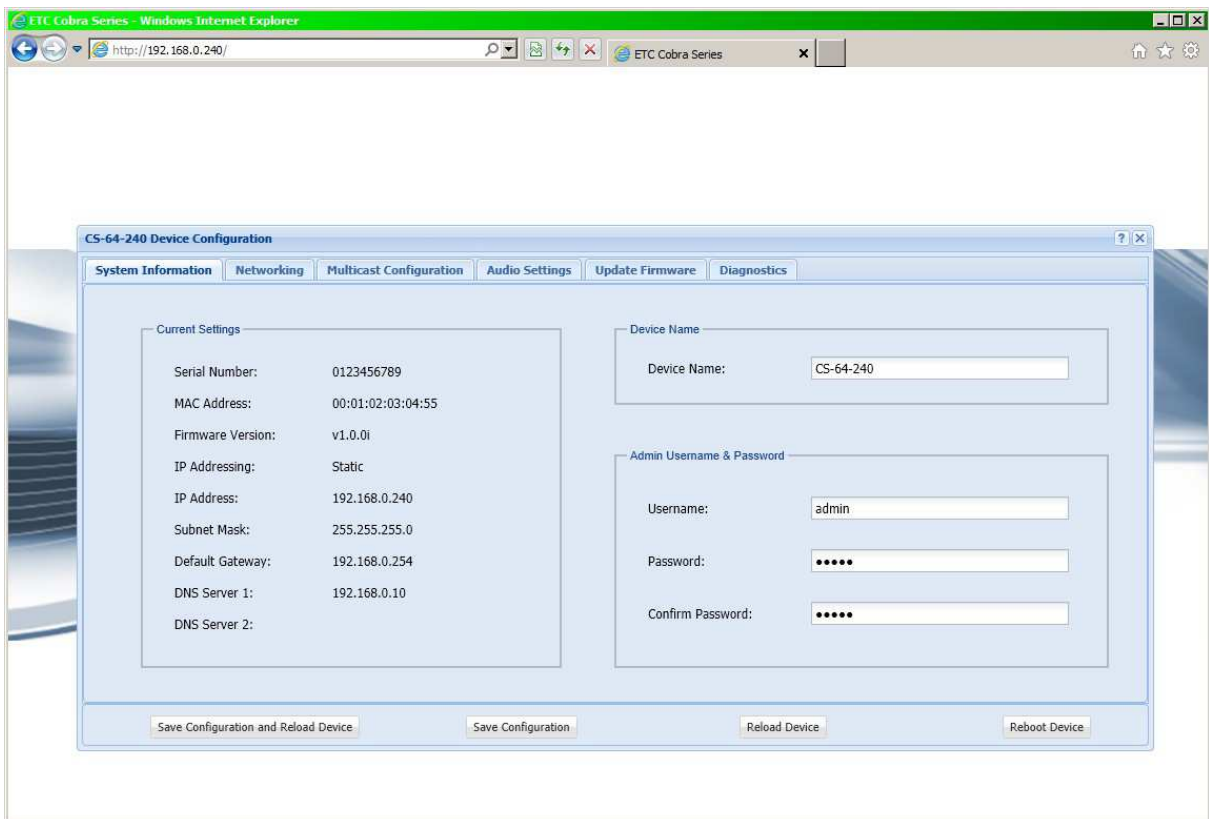


- **System Information** - This page displays device information and admin definable fields for device name and login credentials.
- **Networking** - This page allows the administrator to configure IP settings for the device and select static or DHCP.
- **Multicast Configuration** - This page allows the administrator to configure multicast related details for the respective channels.
- **Audio Settings** - This page allows the administrator to set master volume & mic gain as well as display brightness/contrast. Other feature settings are accessible from this page.
- **Management** - This page provides the administrator with access to settings for syslog reporting. New management related features will be added to this page as they are developed.
- **Update Firmware** - This page allows the administrator to upgrade device firmware.
- **Diagnostics** - This page allows the administrator access to diagnostic tools such as activity log & config file download.

2.4 System Information Page

The System Information page displays pertinent information about the device such as IP address, serial number, firmware version etc. Additionally there are fields the administrator may use to identify the specific device and change the device login credentials for security purposes. See Figure 4 below.

Figure 4



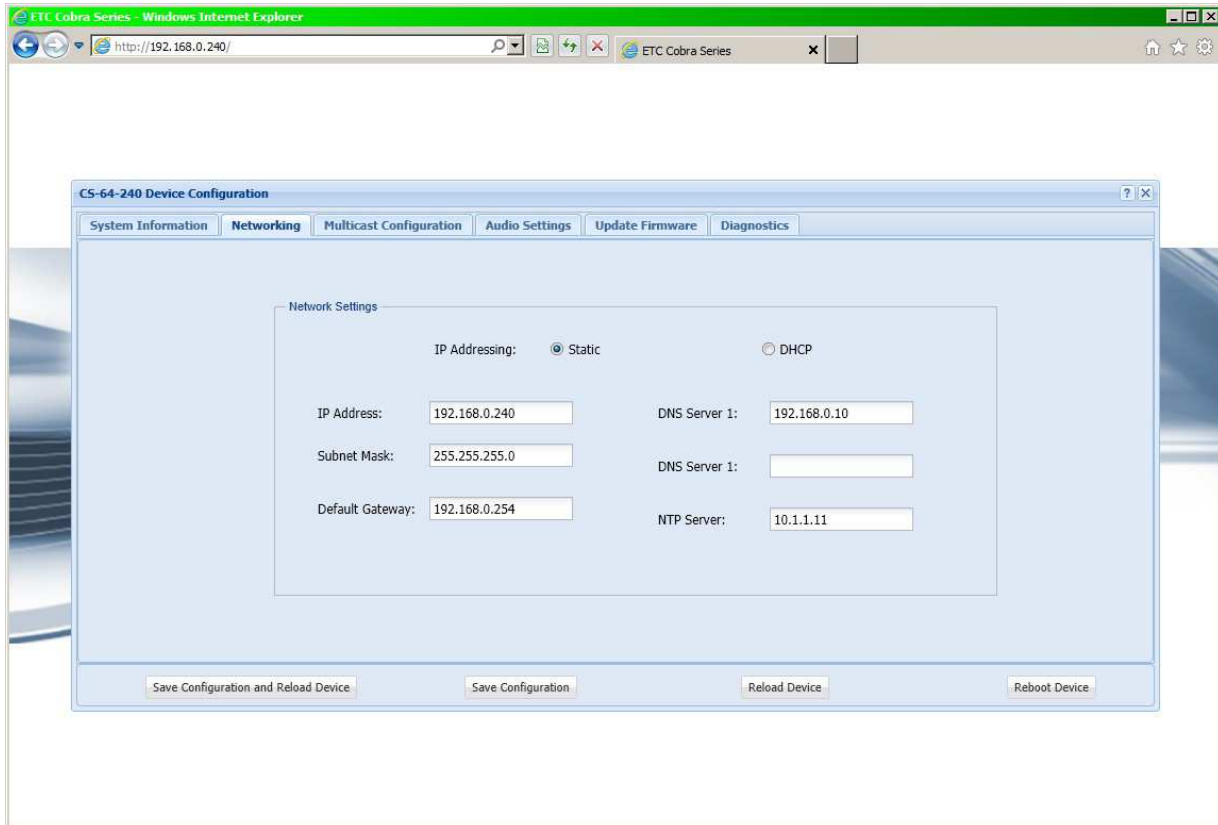
- **Device Name** - Enter any alpha-numeric sequence to uniquely identify the device. Note, information entered here will also indicate on the device display.
- **Username** - Enter new login username. Default is: admin
- **Password** - Enter new login password. Default is: admin
- **Confirm Password** - Enter new password to confirm.

Upon making changes you must click **Save Configuration** if making additional changes on other pages or click **Save Configuration & Reload** to activate the changes. These buttons are located at the bottom of the page.

2.5 Networking Page

The Network Settings page allows the administrator to configure the device with a static IP address or configure using DHCP. Device is default DHCP and IP address will be indicated on the display during boot up. See Figure 5 below.

Figure 5



- **IP Address** - Enter static IP address for the gateway, default is 192.168.0.240.
- **Subnet Mask** - Enter the Subnet Mask for the gateway.
- **Default Gateway** - Enter the Default Gateway for the gateway.
- **DNS Server 1** - Enter the IP address of the primary DNS server if DNS will be utilized.
- **DNS Server 2** - Enter the IP address of the secondary DNS server if DNS will be utilized.
- **NTP Server** - Enter the IP address of the desired NTP server. If field left blank device will not send NTP requests

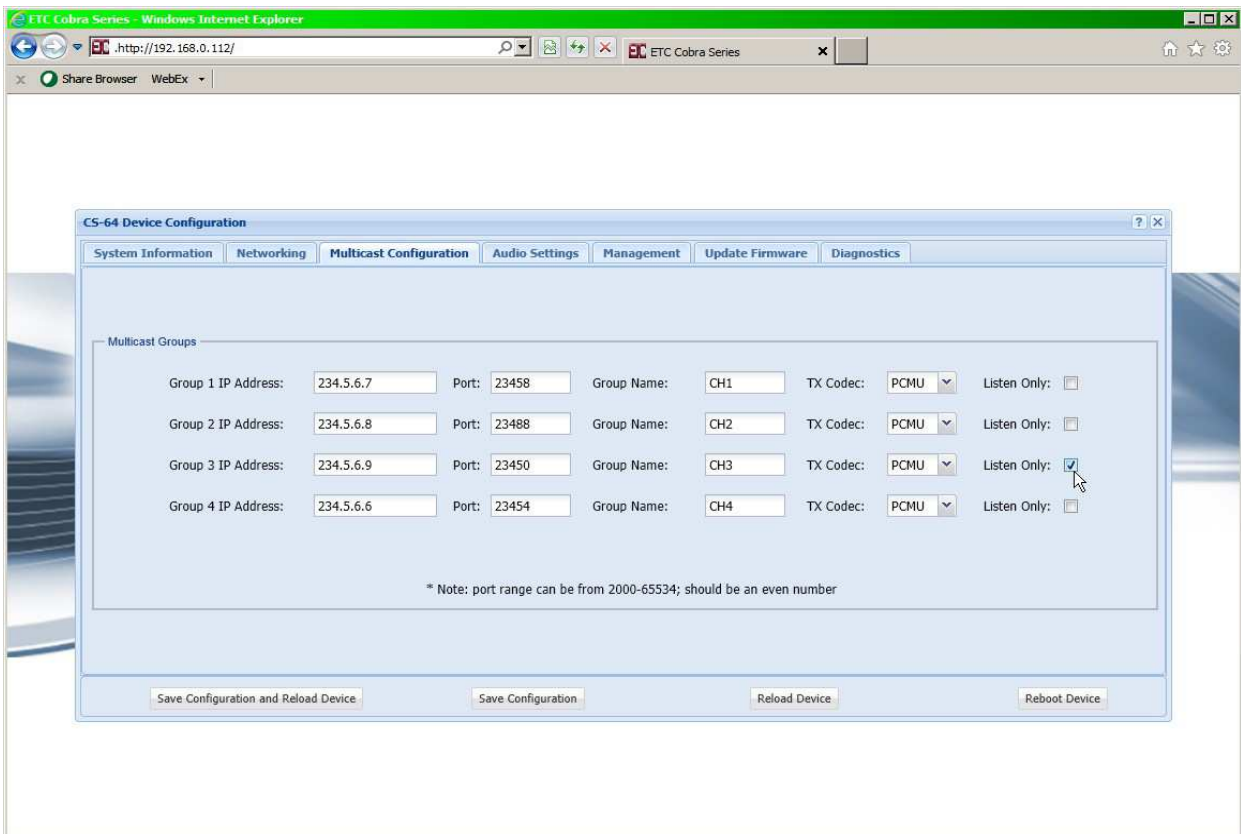
When finished entering IP information click the **Save Configuration & Reload** button at bottom of screen. Once finished with the reload, click the **Reboot** button.

Rebooting is required after making device IP address changes.

2.6 Multicast Configuration Page

The Multicast Configuration page allows an administrator to configure the respective channels with multicast address & port info. See Figure 6 below.

Figure 6

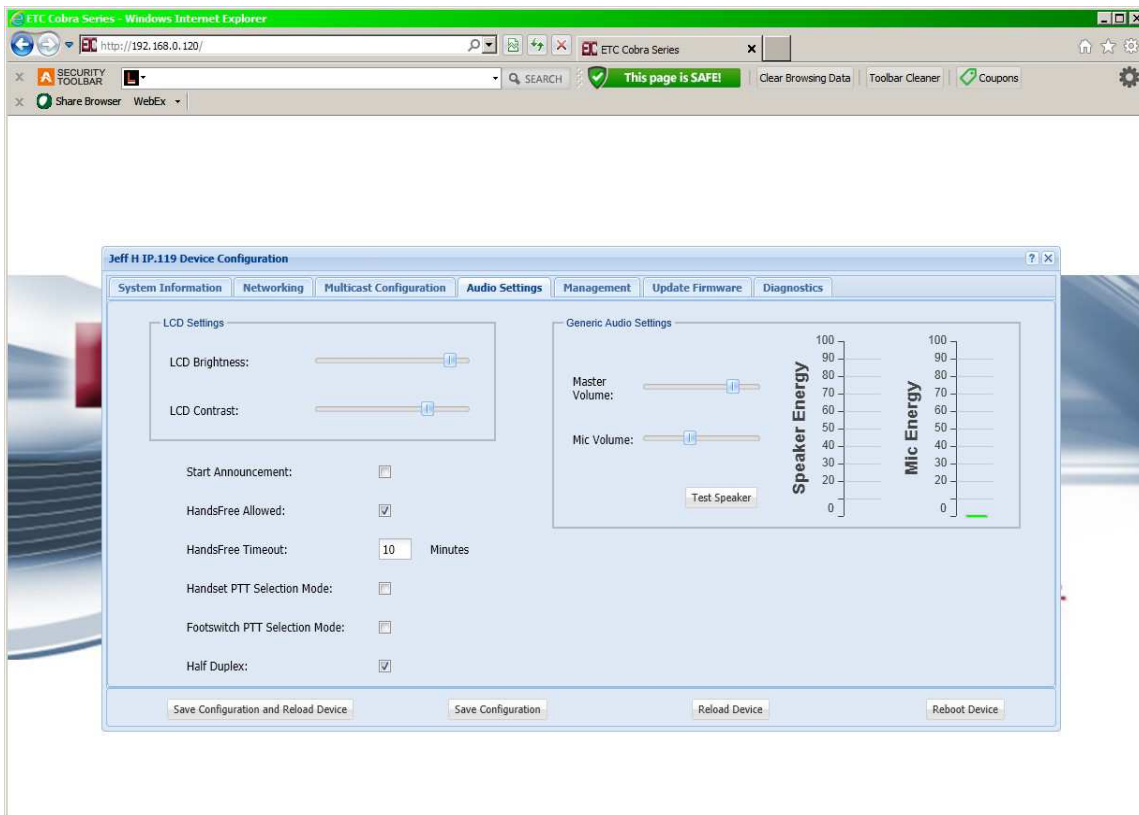


- **Group 1-4 Address** - Allows the administrator to enter multicast addresses for the respective channels 1-4. It is highly recommended to utilize different multicast addresses for each of the respective channels.
- **Ports** - This field allows the administrator to assign ports associated with each channels multicast address. Note: ETC highly recommends using different and even number ports for each of the multicast channels. This ensures compatibility with other 3rd party VoIP applications.
- **Group Name** - This field allows the administrator to assign a name to each respective channel. This channel identifier will also be presented to the end user on the device display. It is recommended to use uppercase letters and allows a maximum of 4 characters per channel.
- **Tx Codec** - This field allows the administrator to assign the CODEC to be used by each channel. Selections are: PCMU (G.711 uLaw), PCMA (G.711 ALaw) & G.729.
- **Listen Only** - Allows the administrator to select channels for listen only mode should this feature be desired.

2.7 Audio Settings Page

The Audio Settings page allows the administrator to adjust specific device properties not covered in other configuration pages such as master volume settings, LCD contrast and other feature settings. See Figure 7.

Figure 7



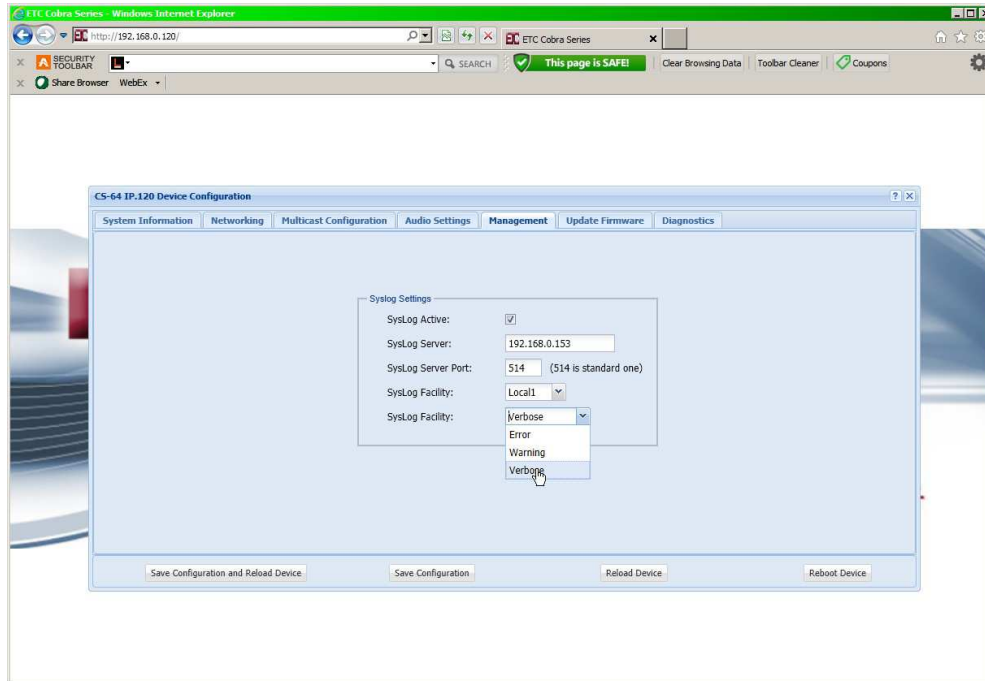
- **LCD Settings** - Allows the administrator to adjust brightness & contrast of device display. Slide right to increase, left to decrease.
- **Audio Settings** - Allows the administrator to adjust master speaker volume & microphone gain of device. Speaker & microphone level meters are provided as simple diagnostic tools to confirm if device is working properly. Master volume level suggested is 80% and Mic Volume level suggested is 40%.
- **Test Speaker** - Pressing this button plays a test message on the device.
- **Start Announcement** - If this box is checked the device will play a message indicating it is being restarted any time the device experiences a reload or reboot.
- **Handsfree Allowed** - Check to enable hands free functionality.
- **Handsfree Timeout** - This setting allows an administrator to set a time limit, in minutes, the hands free mode will stay on if a user forgets to turn it off after use. ETC recommends setting this for 10-15 minutes. Device defaults to 10 minutes, max is 60 minutes.
- **Handset PTT Mode** - This option should only be checked if a PTT handset will be connected to the device. When selected the user will select the channel to Tx/Rx on, an indicator will appear on the display above the selected channel and to talk the user will press the PTT button on the handset

- **Footswitch PTT Mode** - This option should only be checked if the device will have a footswitch connected for activating PTT on a selected channel. Once active channel buttons on device function to select the channel user will transmit on, the footswitch must then be pressed to enable PTT on the selected channel.
- **Half Duplex** - This options sets the device in half duplex mode i.e. speaker is muted when PTT button is pressed. Option is checked by default.
- **Speaker Energy** - Provides visual indication of audio being produced by the built in speaker.
- **Mic Energy** - Provides visual indication of audio sensed at the built in microphone.

2.8 Management

The Management tab currently provides an administrator access to input Syslog Settings for reporting device status. Additional features will be added to this page in the near future. See figure 8 below.

Figure 8



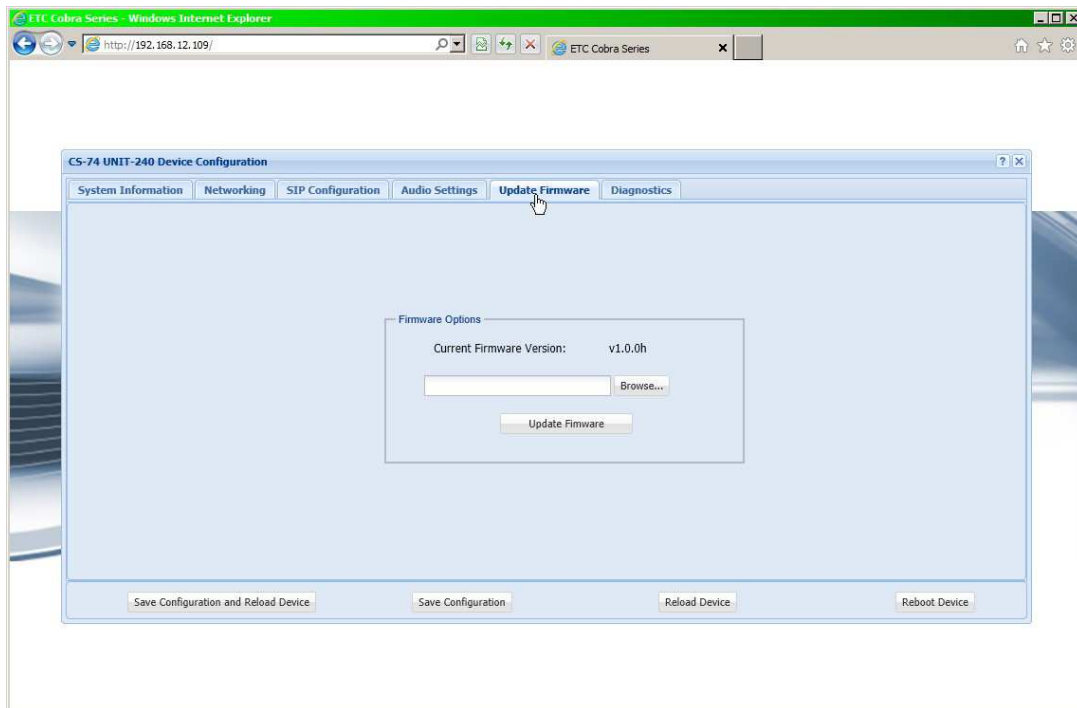
- **Syslog Active** - Click the check box to enable Syslog reporting feature, uncheck to disable.
- **Syslog Server** - Input the respective IP address of the Syslog server where status reports will be sent.
- **Syslog Server Port** - Input the respective port the device will be reporting status to.
- **Syslog Facility** - Click the arrow for a drop down menu to select reporting ID. Selecting one of the displayed selections will cause the device to report activity with this 'ID' which can be used for filtering and/or sorting messages from specific devices.
- **Severity Level** - Click the arrow for a drop down menu to select reporting priority.
 - Verbose - All messages are reported
 - Critical - Only messages classified 'critical' will be reported.

Note: Syslog message definitions are provided in appendix 4.2 of this guide.

2.9 Update Firmware

The Update Firmware page allows an administrator to easily & quickly update firmware on a device. From time to time ETC will send out firmware releases to fix bugs or add features. Simply click the browse button and navigate to where the firmware file has been saved then click Update Firmware. A pop up window will appear indicating status of firmware update. See Figure 9.

Figure 9

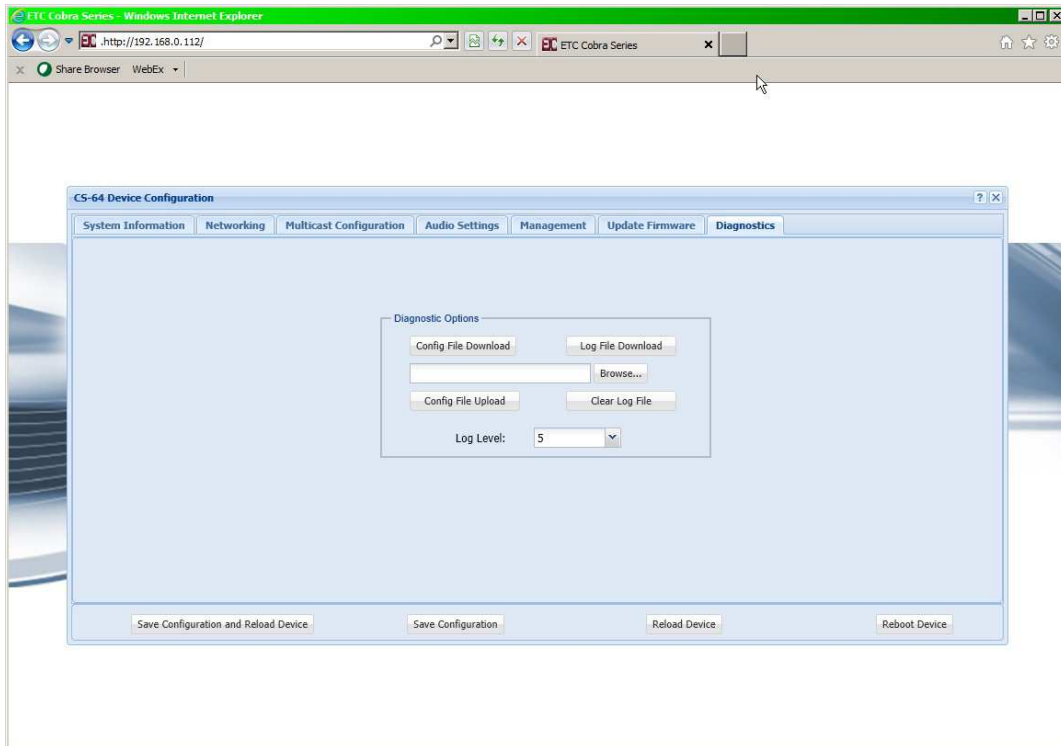


NOTE: AFTER UPDATING FIRMWARE YOU MUST (F5) REFRESH YOUR BROWSER WINDOW FOR NEW FEATURES TO BE DISPLAYED. Most browsers will cache previous pages of the device and therefore a refresh must be performed after a firmware update.

2.10 Diagnostics Page

The Diagnostics page has been provided to allow an administrator access to troubleshooting tools such as Activity Log. This tool will be useful in providing ETC information specific to the device to aid in diagnosing problems. See Figure 10.

Figure 10



- **Config File Download** - Allows the administrator to download the device's current configuration to a .conf file which can be read by any text editing application.
- **Browse** - Allows administrator to find and select CS-64 configuration file for upload.
- **Config File Upload** - Initiates uploading of the selected configuration file.
- **Log Level** - Sets the logging level for the device. Level 6 collects the most data & level 1 the least. ETC recommends leaving log level set to 6 for diagnostic purposes.
- **Clear Log File** - This button clears data in log file to allow for clean data capture.
- **Log File Download** - Clicking this button will download the Log file to destination of choice. The file downloaded is .conf which can be read by any text editing application.

3.0 Frequently Asked Questions

Q: What is the IP address of device?

A: When the device boots up the IP, Mask, Gateway and MAC address are presented briefly on the display. You can also press button 1 & 4 at the same time and IP address will be displayed on the device.

Q: The device is not powering up?

A: If you are using a POE switch, make sure you use the second Ethernet port (closest to external power jack) to power up the device. If you are not using a POE switch then you can use any of the two Ethernet ports along with a local 48VDC power supply.

Q: I do not have any available Ethernet ports at the location I want to install the CS-74 device?

A: If you have any other equipment (PC, IP phone etc.) connected to the network at that location then the second port on the CS-74 device can be utilized as an Ethernet hub. Simply connect the CS-74 device to your network and connect your other piece of equipment to the other available port on the CS-74.

Q: How do I change the device IP?

A: Once the device has booted up and you have identified its IP address, open a browser and browse to the device's IP address, Login and go to Network settings page to change the network settings.

Q: How do I change a channel's label?

A: Label can be changed via the "Multicast Configuration" web page. Max of 4 alphanumeric characters. It is recommended to use upper case characters.

Q: User does not hear audio?

A: Is it on a specific channel or no audio from any channel?

1. If a single channel, check if channel/s is configured correctly. Addresses used must be in the 'multicast' range of IP addresses and even numbered ports should be used.
2. Check the Audio Setting page and verify Master Volume is set to 70%-80%.

Q: IP address of device does not change?

A: The device requires a reboot after changing the IP address. A 'Save & Reload' does not activate IP address changes. Click the reboot button on the web page. Note: after reboot, you will most likely need to refresh your web page (F5).

Q: User reports unable to transmit?

A: Is user pressing PTT button for respective channel?

A: On the 'Audio Settings' web page is there activity on the 'Mic Energy' meter, if yes the physical microphone is working.

A: Check Mic volume on device 'Audio Settings' webpage, should be at 40% or higher depending on the user.

4.0 Appendix

4.1 Specifications

Channels

- (4) Multicast channels

Call Types

- Multicast IP broadcast

Signaling

- None

Interfaces

- 12" Gooseneck Microphone
- Handset w/PTT
- Plantronics Mono Headset
- Footswitch (PTT only)
- NIC, (2) RJ45, 10Mb Ethernet,
- External 48VDC power input

Network Requirements

- 10 Base T, (full duplex)
- IEEE 802.3af (PoE) compliant
- Built in Ethernet Hub
- Protocols - RTP, UDP, TCP, HTTP, Syslog, DHCP, NTP, IGMP, DNS, SSH, SFTP

Dimensions

- Width - 4" / 102 mm
- Depth – 5.5" / 140 mm
- Height – 5.5" / 140 mm
- Weight – 1.1 lbs / 525 g
- 12"/305 mm - Gooseneck microphone

Media

- Bandwidth - supports codecs: G.711 80 kbps, G.729 8kbps.
- RTP, UDP
- Linux OS,
- Audio Latency – Less than 50 ms
- Audio – 300Hz-3kHz, 1 Watt RMS

Management

- Browser based - Internet Explorer, Google Chrome
- Upgradeable application firmware via file upload
- Syslog output

Power

- 48 VDC, 1/2 A, external power supply
- 48 VDC, IEEE 802.3af, Alt A & B, Power over Ethernet compliant (PoE).

Thermal

- 3 Watts
- 10 BTU/hr
- Cooling – Ambient air

4.2 Syslog Messages

Below is a list of generic Syslog messages the CS-64 can produce which can be used with a customer provided Syslog Server. The messages have been classified into 2 categories; Critical & Verbose.

Verbose - "Device type is "
Verbose - "RTPD started"
Verbose - "No channels configured ! Please check the cfg file"
Verbose - "Old_Dev mode is "
Verbose - "Connected to MIC"
Verbose - "RTPD TX part done"
Verbose - "Connected to Speaker"
Verbose - "RTPD RX part done"
Verbose - "Mixer thread started"
Verbose - "Player thread started"
Verbose - "Can't install SIGUSR2 signal !"
Verbose - "Can't install SIGPIPE signal !"
Verbose - "External Mic inserted"
Verbose - "External Mic is present"
Verbose - "External Mic removed"
Verbose - "External Mic absent"
Verbose - "Start playing playfile"
Verbose - "Error opening playfile"
Verbose - "Stop playing playfile"
Verbose - "Error reading playfile"
Verbose - "fill_samples_buf: wrong len "
Critical - "spk: can't open device "
Critical - "spk: can't allocate hardware configuration structure"
Critical - "spk: hardware configuration structure cannot be assigned to device"
Critical - "spk: access method cannot be configured : " << snd_strerror(err);
Critical - "spk: can't get access method"
Critical - "spk: access method set failed : "
Critical - "spk: can't configure format : "
Critical - "spk: can't get format : "
Critical - "spk: format set failed : "
Critical - "spk: can't set sample rate : "
Critical - "spk: can't get sample rate : "
Critical - "spk: sample rate set failed : "
Critical - "spk: can't set channels : "
Critical - "spk: can't get channels : "
Critical - "spk: channels set failed : "
Critical - "spk: can't set buffer size : "
Critical - "spk: can't get buffer size : "
Critical - "spk: buffer size set failed : "
Critical - "spk: can't set period size : "
Critical - "spk: can't get period size : "
Critical - "spk: period size set failed : "
Critical - "spk: can't configure hw_params : "
Critical - "spk: buffer overrun cannot be recovered, snd_pcm_prepare fail: "
Critical - "spk: ESTRPIPE"
Critical - "spk: suspend cannot be recovered, snd_pcm_prepare fail: "
Critical - "spk: EBADFD"
Critical - "spk: unknown error: "
Critical - "spk: Invalid poll descriptors count"
Critical - "spk: Unable to obtain poll descriptors for write: "
Critical - "spk: Write error: "
Critical - "spk: Wait for poll failed"

Critical - "g729ab_decode: Invalid parameter !"
Verbose - "\nStat: total streams: "
Verbose - "Stat: streamX: [ChX] ssrc: 0x"
Critical - "**** rw_and_poll_loop failed, restarting ..."
Critical - "mic: can't open device "
Critical - "mic: can't allocate hardware configuration structure : "
Critical - "mic: hardware configuration structure cannot be assigned to device : "
Critical - "mic: access method cannot be configured : "
Critical - "mic: can't get access method : "
Critical - "mic: access method set failed : "
Critical - "mic: can't configure format : "
Critical - "mic: can't get format : "
Critical - "mic: format set failed : "
Critical - "mic: can't set sample rate : "
Critical - "mic: can't get sample rate : "
Critical - "mic: sample rate set failed : "
Critical - "mic: can't set channels : "
Critical - "mic: can't get channels : "
Critical - "mic: channels set failed : "
Critical - "mic: can't set buffer size : "
Critical - "mic: can't get buffer size : "
Critical - "mic: buffer size set failed : "
Critical - "mic: can't set period size : "
Critical - "mic: can't get period size : "
Critical - "mic: period size set failed : "
Critical - "mic: can't configure hw_params : "
Critical - "mic: buffer overrun"
Critical - "mic: buffer overrun cannot be recovered, snd_pcm_prepare fail: "
Critical - "mic: ESTRPIPE"
Critical - "mic: suspend cannot be recovered, snd_pcm_prepare fail: "
Critical - "mic: EBADFD"
Critical - "mic: unknown error: "
Critical/Verbose - "alsa_read: "
Verbose - "channel_disabled: Invalid channel: "
Verbose"Disabling MIC"
Critical"enable_channel: Invalid channel: "
Verbose - "Enabling MIC on channel"
Critical - "random32: failed"
Critical - "rebooting"
Critical - "booted"

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ETC warrants that your ETC hardware product shall be free from defects in material and workmanship for One Year, beginning from the date of purchase. Except where prohibited by applicable law, this warranty is nontransferable and is limited to the original purchaser. This warranty gives you specific legal rights, and you may also have other rights that vary under local laws

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