CS-74

Administration & Setup Guide

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Revised December 9th, 2014

1.0   Product Overview

1.1   Product Description

The CS-74 is a four line/channel SIP endpoint device capable of connecting 4 simultaneous SIP calls.

1.2   Product features

- **Display** – Provides information such as device name, user name and line/channel assignments as defined by administrator

- **Volume Control** – Each channel has individual volume control so users can set levels to their liking.

- **Loud Speaker** – Each CS-74 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 status indication for device condition such as: line registered, ring, call connected, and audio activity

- **PTT Buttons** – Buttons on front panel serve not only as PTT (Press to Talk) on the respective line but in certain modes, initiate/drop a call, and activate/deactivate Hands Free operation.

- **Ethernet Hub** – Each CS-74 is equipped with 2 Ethernet ports for connecting other IP devices such as PC, IP phone, etc. or adding additional CS-74's. Port 2 is PoE compliant for powering the device from a PoE compliant Ethernet switch

- **Local Power** – Each CS-74 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-74 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-74 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-74 is typically equipped with a close talking gooseneck microphone. For listen only models this option is removed.
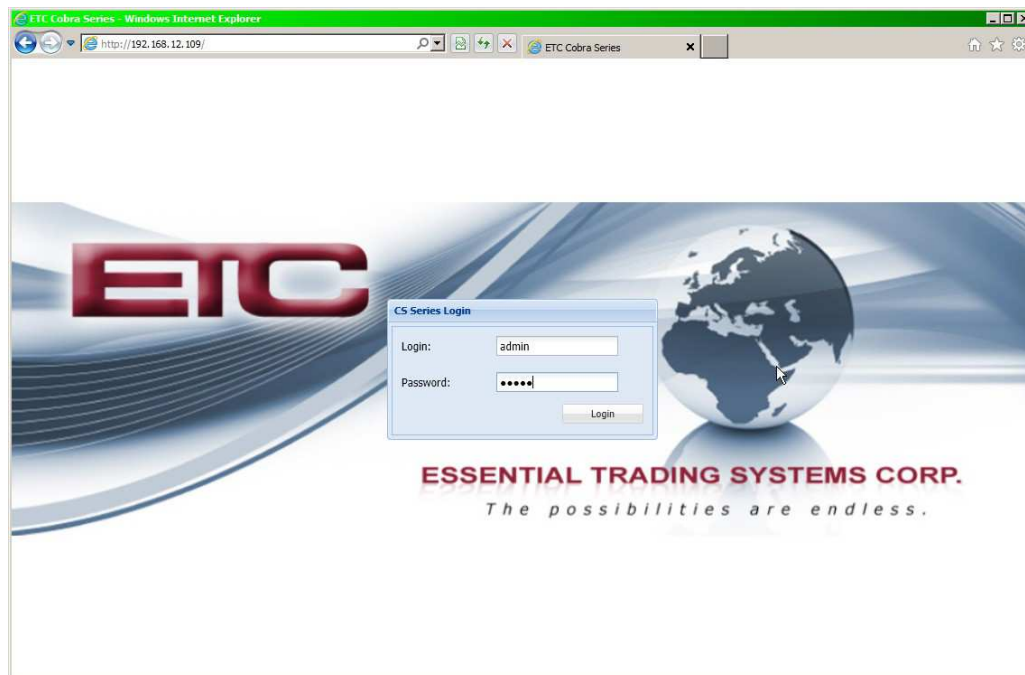
2.0 Administration

2.1 Login

The CS-74 is configured via browser interface. CS-74's ship, default, set to DHCP. Upon connection to appropriate network the device will automatically acquire an IP address. 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 device. Type the IP address into the URL bar of the browser and press enter. The CS-74 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.
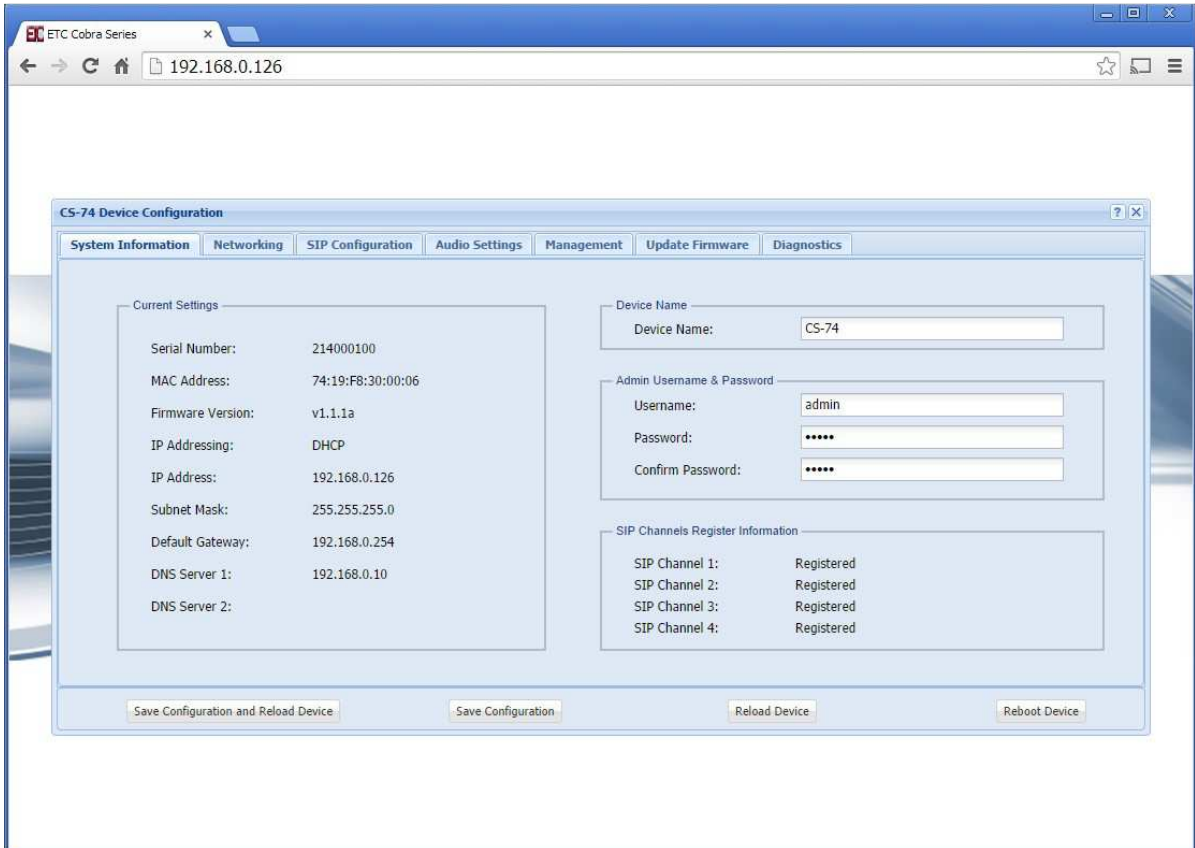
Figure 1

2.2   System Settings

After logging in, you are brought to the System Settings page. Here, access to all administrative functions of the CS-74 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 more detail later in the guide. Figure 3 shows the options available.

Figure 3

- **System Information** – This page displays device information and administrator 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
- **SIP Configuration** – This page allows the administrator to configure SIP related details for each of the lines/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
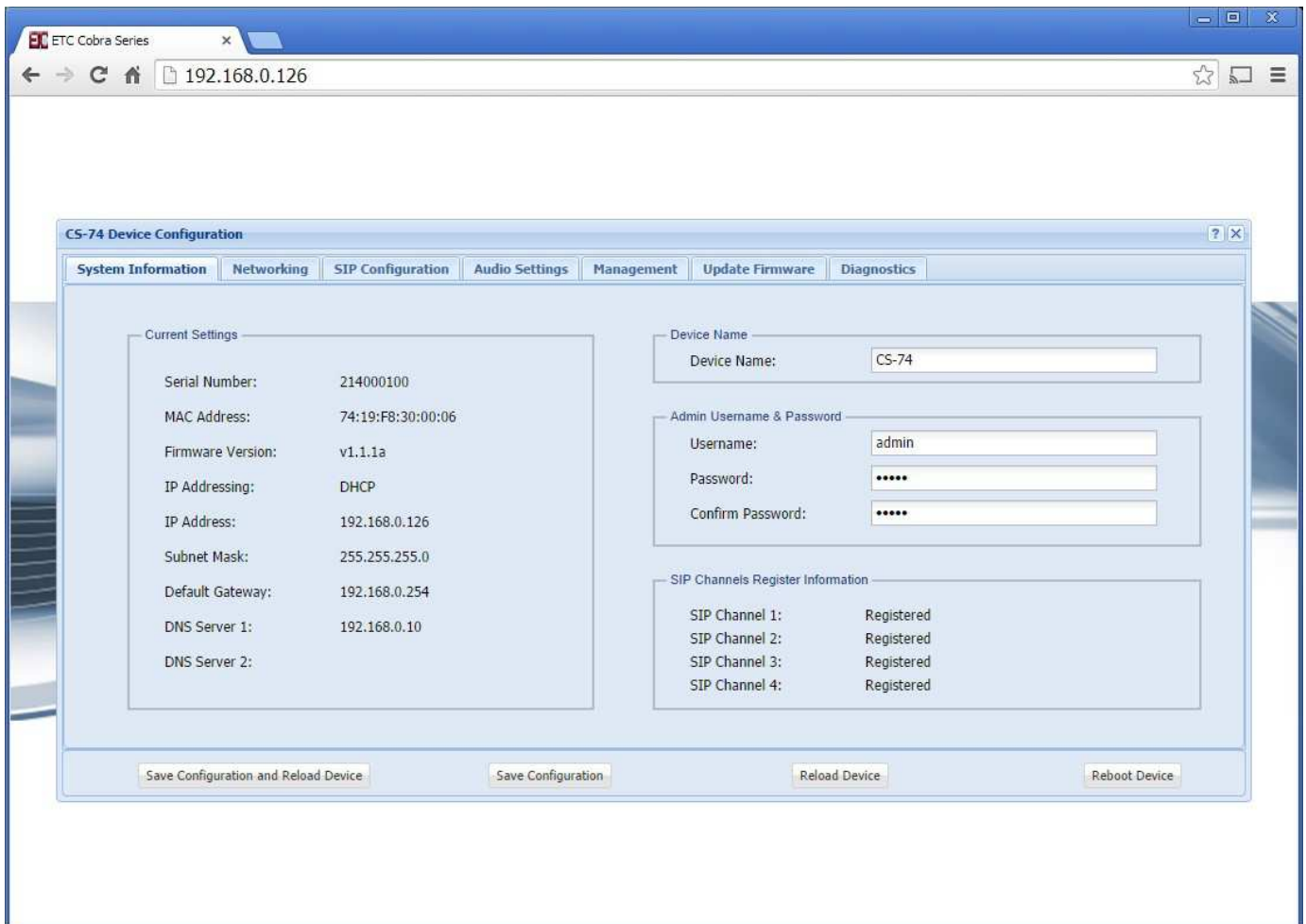
- **Device Name** – Enter any alpha-numeric sequence to uniquely indentify the device. Note, information entered here will also indicate on the device display.
- **Username** – Enter new login username. Default is: admin
- **Password** – Enter new login password. Default is: admin
- **Confirm Password** – Renter 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
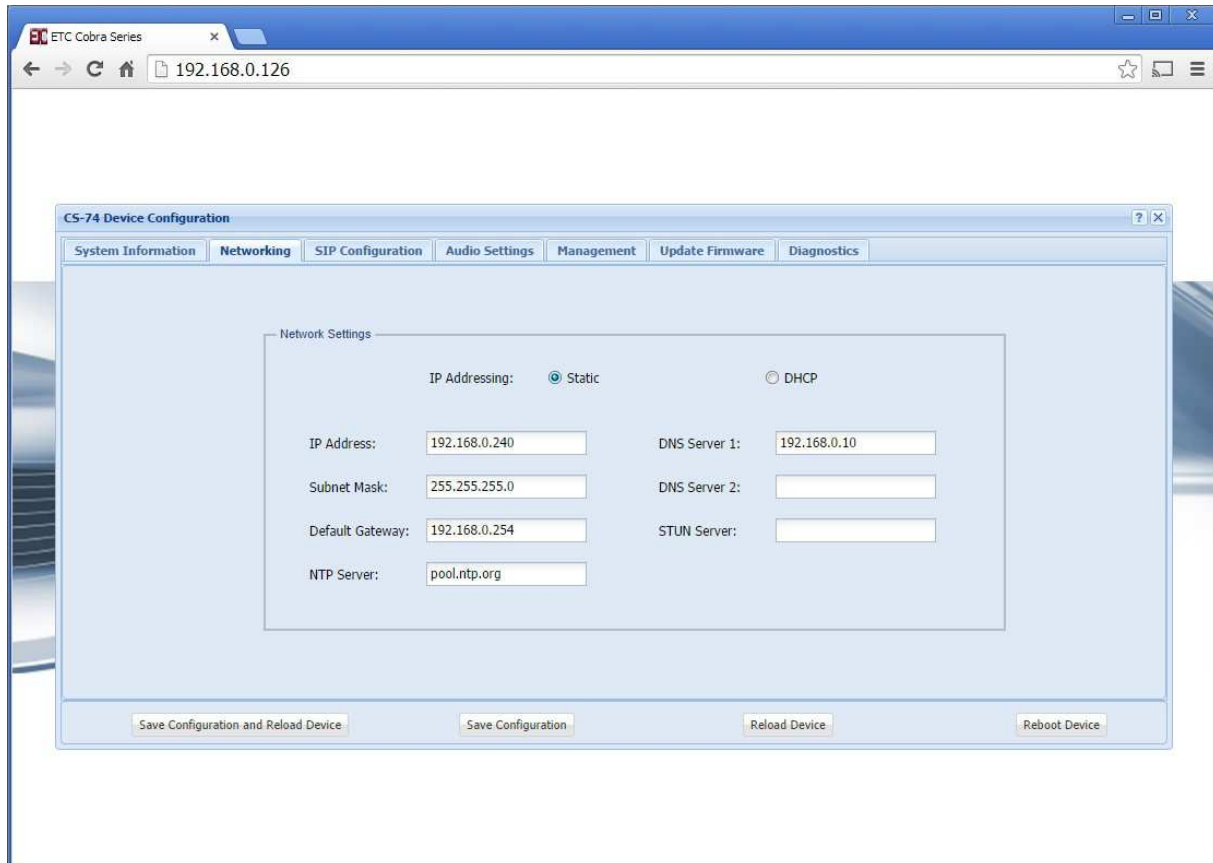
- **IP Address** – Enter static IP address for the gateway.
- **Subnet Mask** – Enter the Subnet Mask for the gateway.
- **Default Gateway** – Enter the Default Gateway for the gateway.
- **NTP Server** – Enter IP or DNS name of NTP (Network Time Protocol) Server. If left blank device will not poll for time/date.
- **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.
- **STUN Server** – Enter IP address of STUN Server. Needed for firewall penetration.

When finished entering IP information click the **Save Configuration & Reload** button at bottom of screen. Once finished with the reload, click the **Reboot** button.
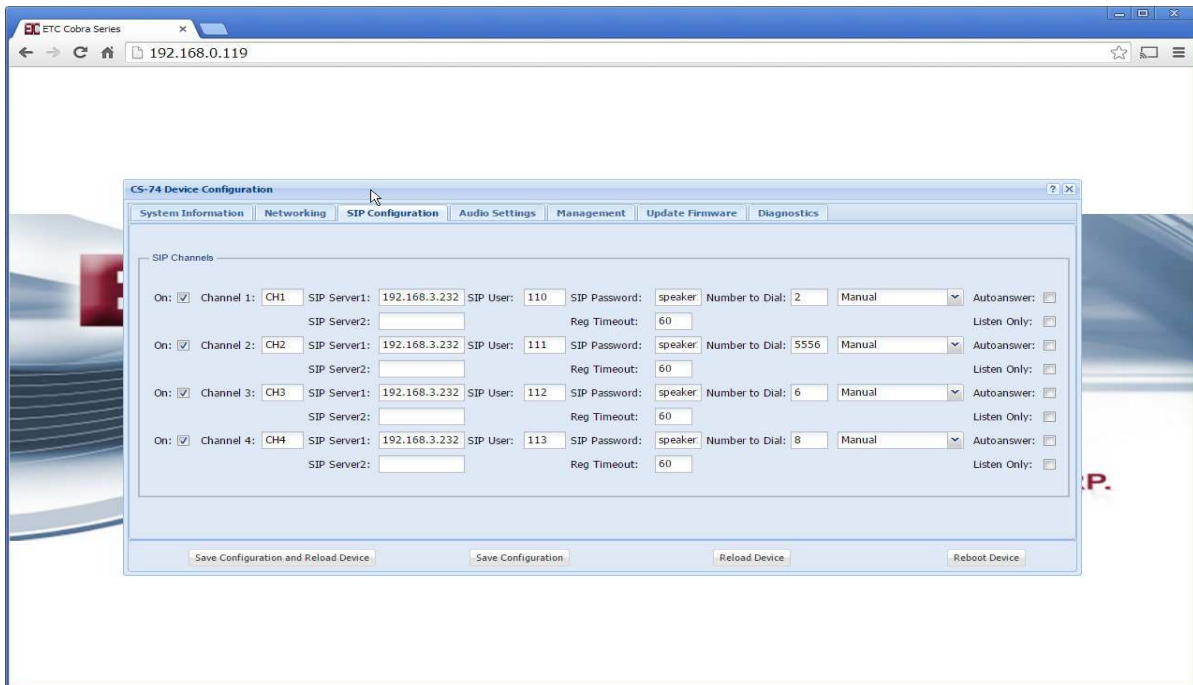
Rebooting is required after making device IP address changes.

2.6   SIP Configuration Page

The SIP Configuration page allows an administrator to configure the respective SIP channels or lines of the device. Lines/channels can be set for different modes of operation, turned on or off, etc, depending on specific application needs. See Figure 6 below.
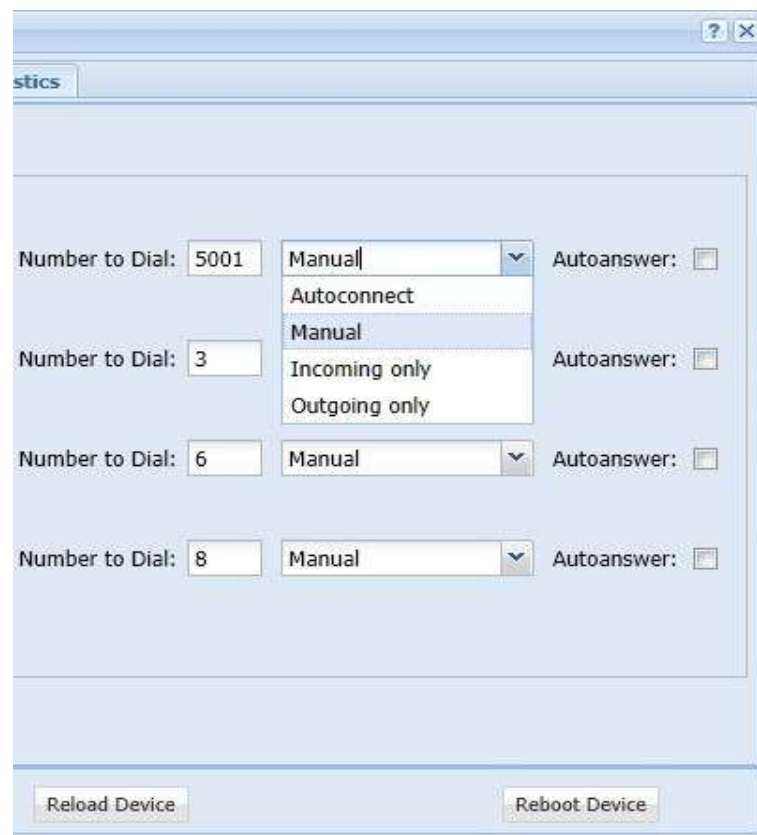
Figure 6

- **'On' Check box** – Allows the administrator to turn on or off the respective line. If turned off any 'line information' will not be displayed on the device.
- **Channels 1-4** – This field allows the administrator to assign a name to the respective channel. This name will be displayed on the device. It is recommended to use upper case letters and limit number of characters to 4 per channel.
- **SIP Server** – This field allows the administrator to input the address of the SIP Server to which the device will register with. Can be either DNS name or IP address. Each channel can be configured to register with a different SIP Server if desired.
- **SIP Server 2** – This field allows the administrator to input the IP address of a backup SIP server in the event the primary is not available.
- **SIP User** – This field allows the administrator to assign an extension or SIP identifier for registration.
- **SIP Password** – This field allows the administrator to assign the SIP Password for registration.
- **Reg Timeout** – This field allows the administrator to set the time span, in seconds, for re-registration of the channel to the SIP server.
- **Number to Dial** – This field allows the administrator to assign an extension the device will dial. Note: This function works in conjunction with specific 'Mode' selected.
- **Auto Answer** – If checked this option sets the device to automatically answer an incoming call to the respective channel as assigned in the SIP User field. This option only becomes available with specific 'modes.'
- **Listen Only** – Allows administrator to set a specific channel for listen only mode.

- **SIP Modes** – The drop down menu allows the administrator to select various modes of operation for each line. See Figure 7
  - o **Autoconnect** – Selecting this mode instructs the device to automatically connect to the extension/number, as defined in the Number to Dial field immediately upon successful boot up.
  - o **Manual** – Selecting this mode instructs the device to wait for user intervention to either accept a call or make a call. Auto answer can be selected with this mode. If selected any incoming SIP calls to the respective extension will be automatically answered by the device. However the user can still initiate an outgoing call from the device. The PTT button for the respective line is used to make/answer a call and double pressing the PTT button quickly will hangup/drop the call.
  - o **Incoming Only** – Selecting this mode instructs the device to wait for user intervention to accept an incoming SIP call. In this mode the device will not make outgoing calls. Auto answer is available with this mode.
  - o **Outgoing Only** – Selecting this mode instructs the device to wait for user intervention to make an outgoing SIP call. The call is initiated by pressing the PTT button on the respective line. When in this mode the device will not accept incoming SIP calls. Auto answer is disabled in this mode.
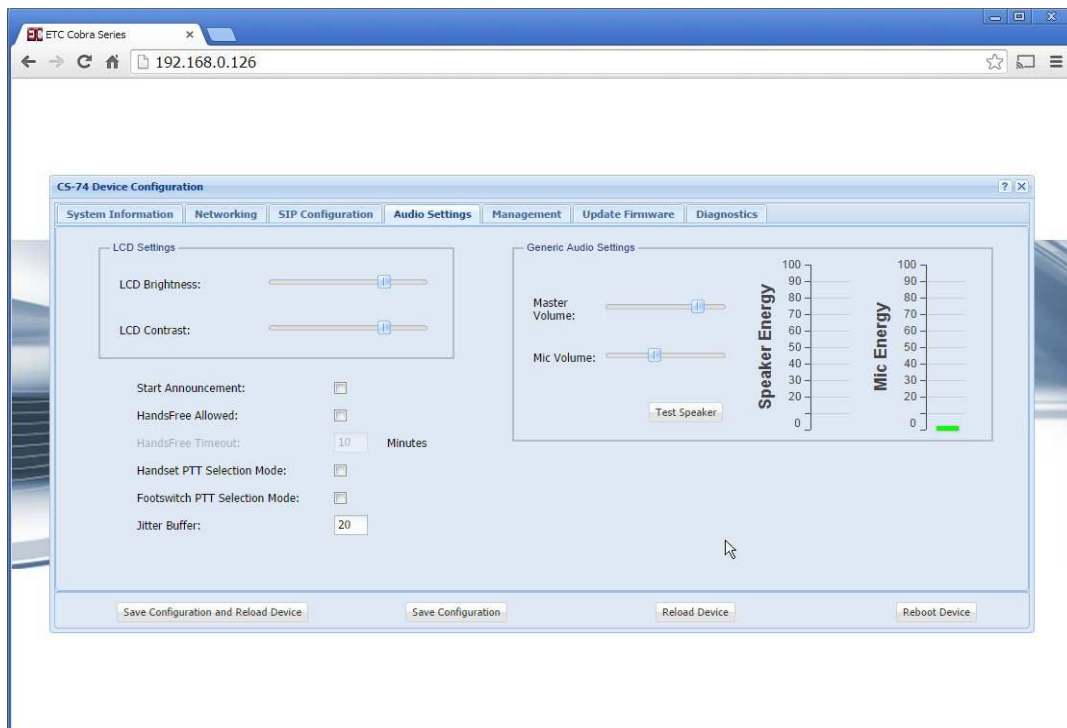
Figure 7

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 8.

Figure 8

- **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** – Checking this box enables Hands Free functionality
- **Handsfree Timeout** - This setting allows an administrator to set the time, in minutes, the handsfree 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** – Checking this box enables use of a foot switch to activate PTT function of a selected channel. In this mode the buttons on front panel are used to select a channel for which the footswitch will activate the PTT.
- **Jitter Buffer** – Enter number for packet size matching with 3rd party SIP systems.

2.8   Management page

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 9 below.

Figure 9
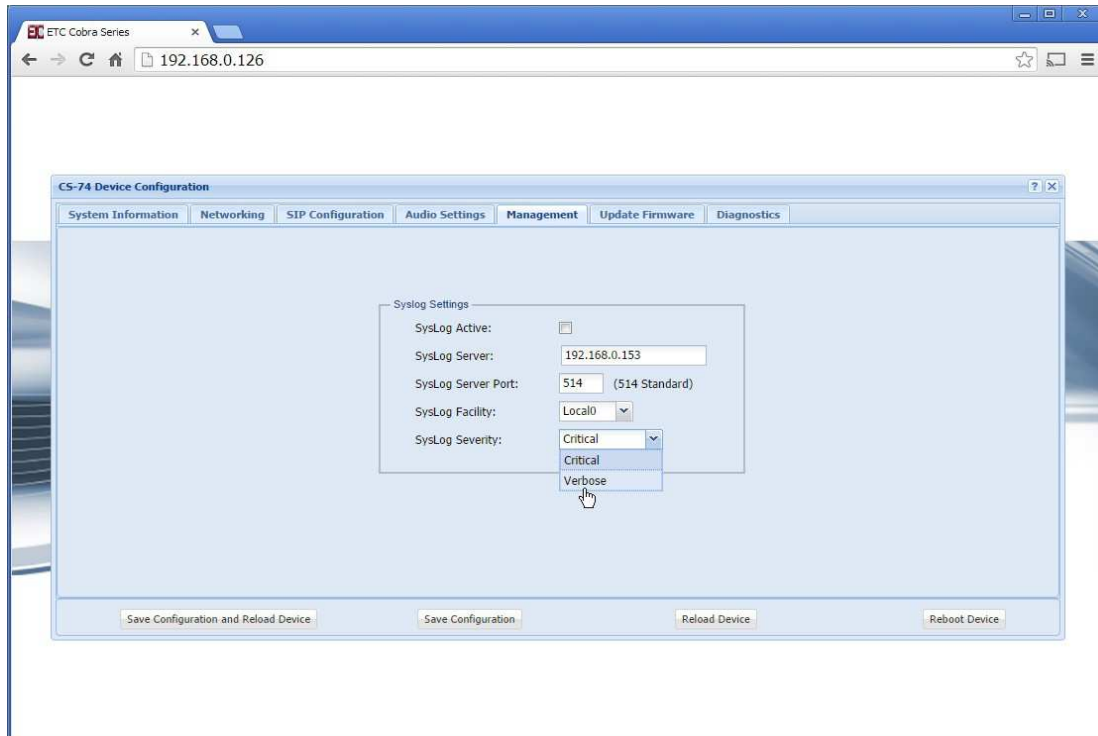
- **Syslog Active** – Click the check box to enable Syslog reporting feature, uncheck to disable.
- **Syslog Server** – Input the respective IP address of the Syslog server where status reports will be sent.
- **Syslog Server Port** – Input the respective port the device will be reporting status to.
- **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 10.

Figure 10
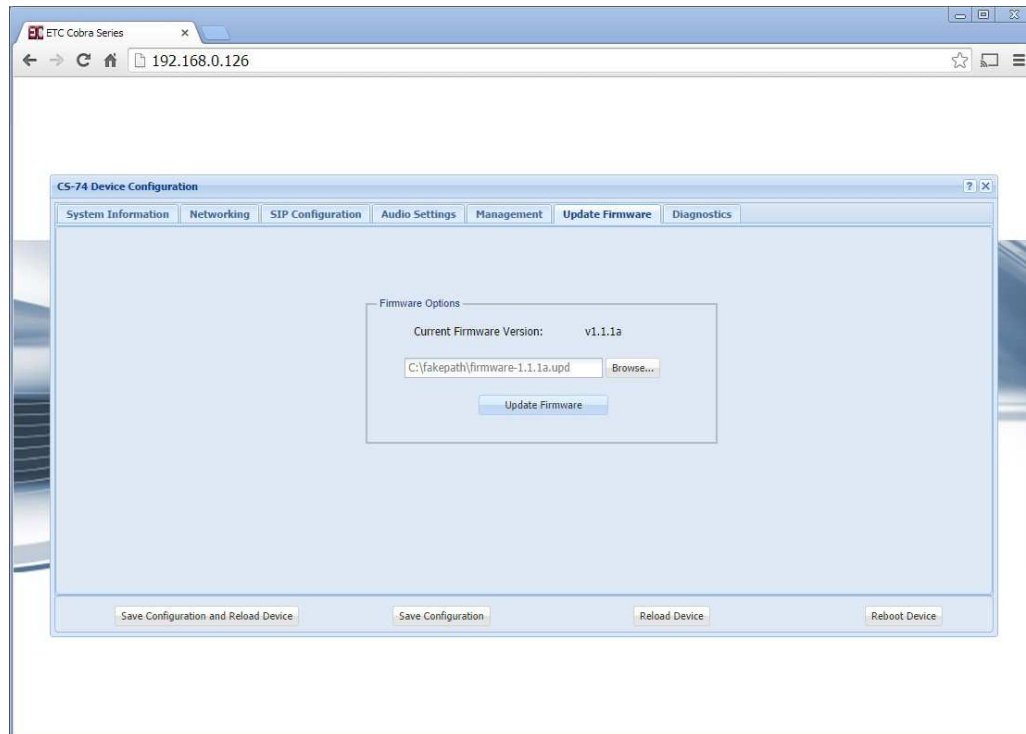
NOTE: AFTER UPDATING FIRMWARE YOU MUST (F5) REFRESH YOUR BROWSER WINDOW FOR NEW FEATURES TO BE DISPLAYED. Most browsers will cache previous pages of the device and therefore a refresh must be performed after a firmware update.

2.10 Diagnostics Page

The Diagnostics page has been provided to allow an administrator access to troubleshooting tools such as Activity Log. These tools will be useful in providing ETC information specific to the device to aid in diagnosing problems. See Figure 11.

Figure 11
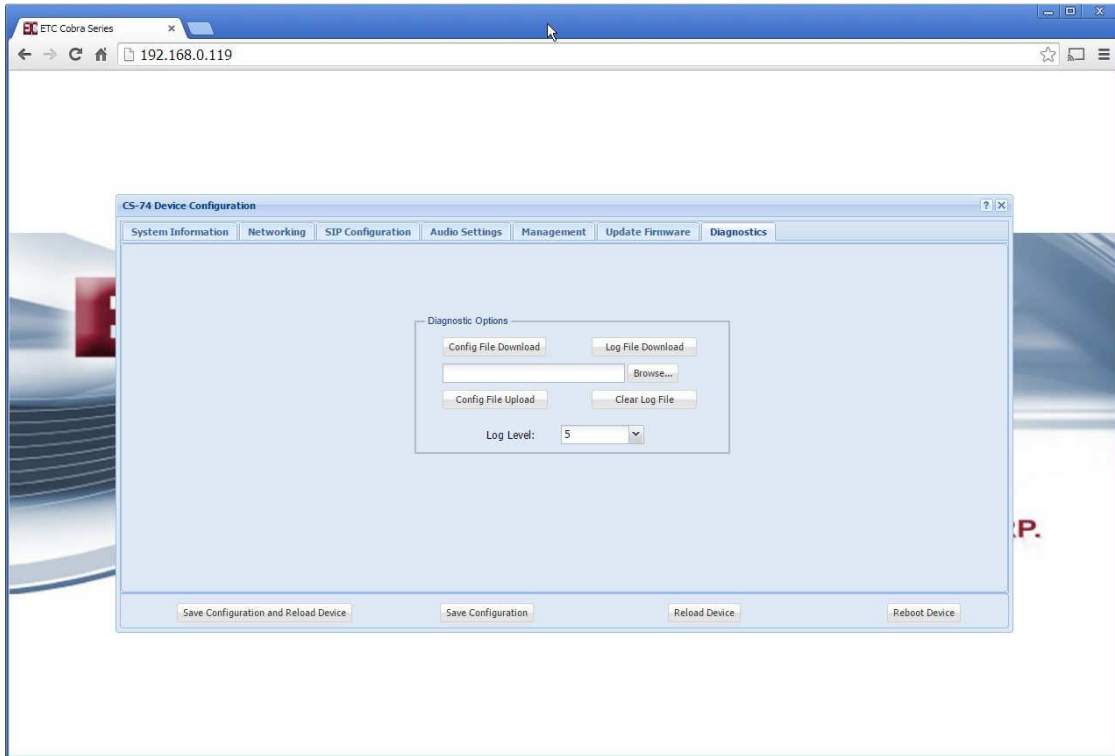
- **Config file Download** – Allows administrator to download the devices configuration information to a PC or server. File format is .conf and is readable with Notepad or equivalent.
- **Browse** – Allows administrator to find & select CS-74 configuration file for upload.
- **Config File Upload** – Uploads the selected configuration file.
- **Log Level** – Allows administrator to set the logging level to capture event information for troubleshooting purposes. Setting range is 1 (lowest) to 6 (highest). ETC recommends leaving device at level 6 as this captures the most information.
- **Log file Download** – Click this button to download the log info to file on a PC or server. File format is .conf which is readable with Notepad or equivalent.

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 than 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: Channel is not registering? (No amber LED on a Channel)

A: Via device web page, check to make sure the respective channel is enabled and has the correct SIP connection information i.e., SIP server IP, extension, password, etc.

Q: How do I change channel's label?

A: Label can be changed via the "SIP Configuration" web page. Max of 4 alphanumerical 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 is connected (green LED on device). If not connected instruct user on method to connect the channel.
2. Is channel registered? If not investigate reasons for lack of channel registration

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.

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 50% or higher depending on the user.

A: Is channel connected? Indicated by green LED above respective channel PTT button.

Q: Audio received on device is choppy/garbled

A: Please check if the codec chosen by the SIP server is compatible with the CS-74 device. List of compatible codecs listed on the CS-74 Admin Guide.

A: Please check with the network administrator to ensure a proper QOS policy is in place.

Q: Reports of single user transmitting louder/quieter than other users

A: Once you have identified the IP address of that user's device, open a browser and browse to the device's IP address, Login and go to Audio settings to adjust the master microphone and speaker levels as needed.

4.0   Appendix

4.1   Specifications

Channels
- (4) SIP Lines

Call Types
- SIP, hoot conferencing
- SIP Private line (ARD/MRD)

Signaling
- SIP

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)
- IEE 802.3af (PoE) compliant
- Built in Ethernet Hub
- Protocols - SIP, UDP, NTP, DHCP, TCP, HTTP, Syslog, 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 and Speex.
- SIP, UDP
- Linux OS,
- 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 may 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 overrrun 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"

5.0 CS-74 Limited Warranty

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

ETC's entire liability and your exclusive remedy for any breach of warranty shall be, at ETC's option, (1) to repair or replace the hardware, or (2) to refund the price paid, provided that the hardware is returned to the point of purchase or such other place as ETC may direct with a copy of the sales receipt or dated itemized receipt. Shipping and handling charges may apply except where prohibited by applicable law. ETC may, at its option, use new or refurbished or used parts in good working condition to repair or replace any hardware product. Any replacement hardware product will be warranted for the remainder of the original warranty period or thirty (30) days, whichever is longer or for any additional period of time that may be applicable in your jurisdiction. This warranty does not cover problems or damage resulting from (1) accident, abuse, misapplication, or any unauthorized repair, modification or disassembly; (2) improper operation or maintenance, usage not in accordance with product instructions or connection to improper voltage supply; or (3) use of consumables, such as replacement batteries, not supplied by ETC except where such restriction is prohibited by applicable law.

Before submitting a warranty claim, we recommend you contact ETC support at support@essentialtel.com for technical assistance. Valid warranty claims are generally processed through the point of purchase during the first thirty (30) days after purchase; however, this period of time may vary depending on where you purchased your product – please check with ETC for details. Warranty claims or other product related questions should be addressed directly to ETC. The addresses and customer service contact information for ETC can be found in the documentation accompanying your product and on the web at www.essentialtel.com.

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