



CG-804M



Administration & Setup Guide

Table of Contents

1.0	Product Overview	4
1.1	Product Description	4
1.2	Product features.....	4
2.0	Administration.....	5
2.1	Login	5
2.2	System Settings.....	6
2.3	Menu Options	7
2.4	System Information Page	8
2.5	Networking Page	9
2.6	Multicast Configuration Page.....	10
2.7	Audio Page	11
2.9	Update Firmware	13
2.10	Diagnostics Page.....	14
3.0	Frequently Asked Questions.....	15
4.0	Appendix	16
4.1	Specifications	16

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1.0 Product Overview

1.1 Product Description

The CG-804M is a four channel multicast to analog gateway device capable of transmitting or receiving on up to (4) multicast groups. The CG-804 has (4) analog E&M type ports for connection of 4-wire analog audio for use in applications such as Hoot n Holler & LMR (Land Mobile Radio). The CG-804M also supports other features such Syslog for device management, DHCP or Static addressing and utilizes Linux as its core OS. The CG-804M is configured via web browser.

1.2 Product features

- **Volume Control** - Each analog channel has individual Tx & Rx volume control via the web interface so administrators can set levels as needed. The effective range is -4dB to +10dB adjustable in increments of .2
- **E&M Ports** - The CG-804M is outfitted with (4) analog 4-wire E&M type ports on the back of the unit. Each port presents a balanced, transformer isolated, 600 Ohm, line level input & output. Additionally each E&M port has 2 indicator LED's, Green = Port is online, Yellow = Audio output activity. Ports 1-4 are in order from left to right as viewed in picture below.

E&M Pin out: Transmit = Pins 1 & 2
 Receive = Pins 4 & 5
 CC = Pins 7 & 8 (VAD activated contact closure)



- **Linux OS** - The CG-804M utilizes Ubuntu Server as its core operating system.
- **Web Admin** - The CG-804M is administered via web browser and is compatible with latest versions of Chrome, and IE. All gateway features & functions are configured via the web interface. The admin portal secured via login credentials which are changeable.

Default login credentials: Username - admin, Password - admin

2.0 Administration

2.1 Login

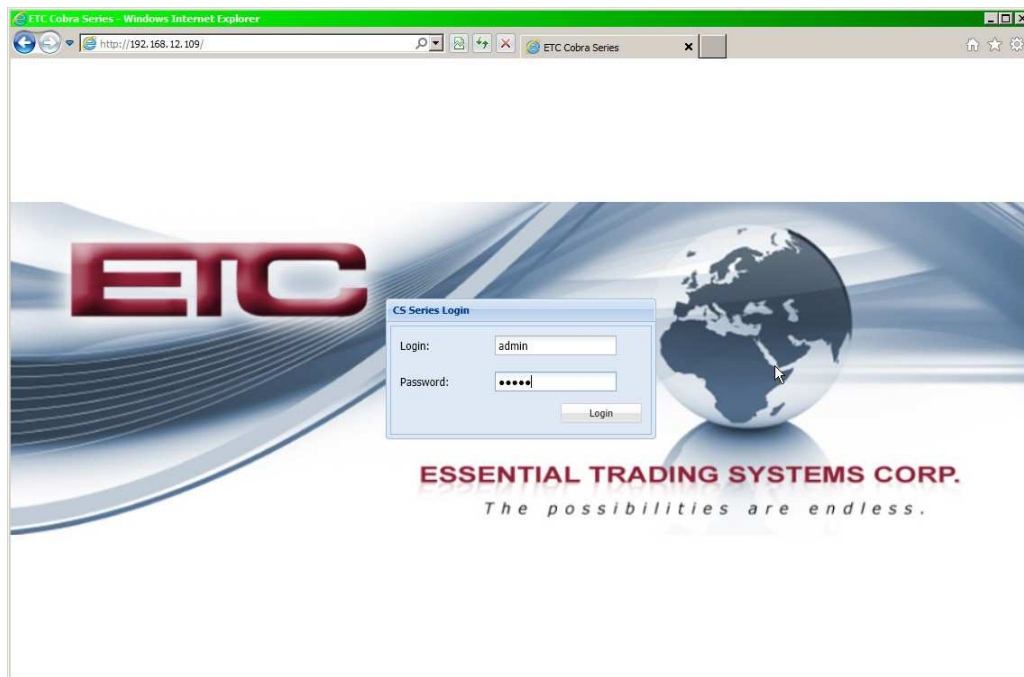
The CG-804M is configured via browser interface. CG-804M's ship set to a static IP as default, see "Network Settings" section of this for details.

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 CG-804M 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.

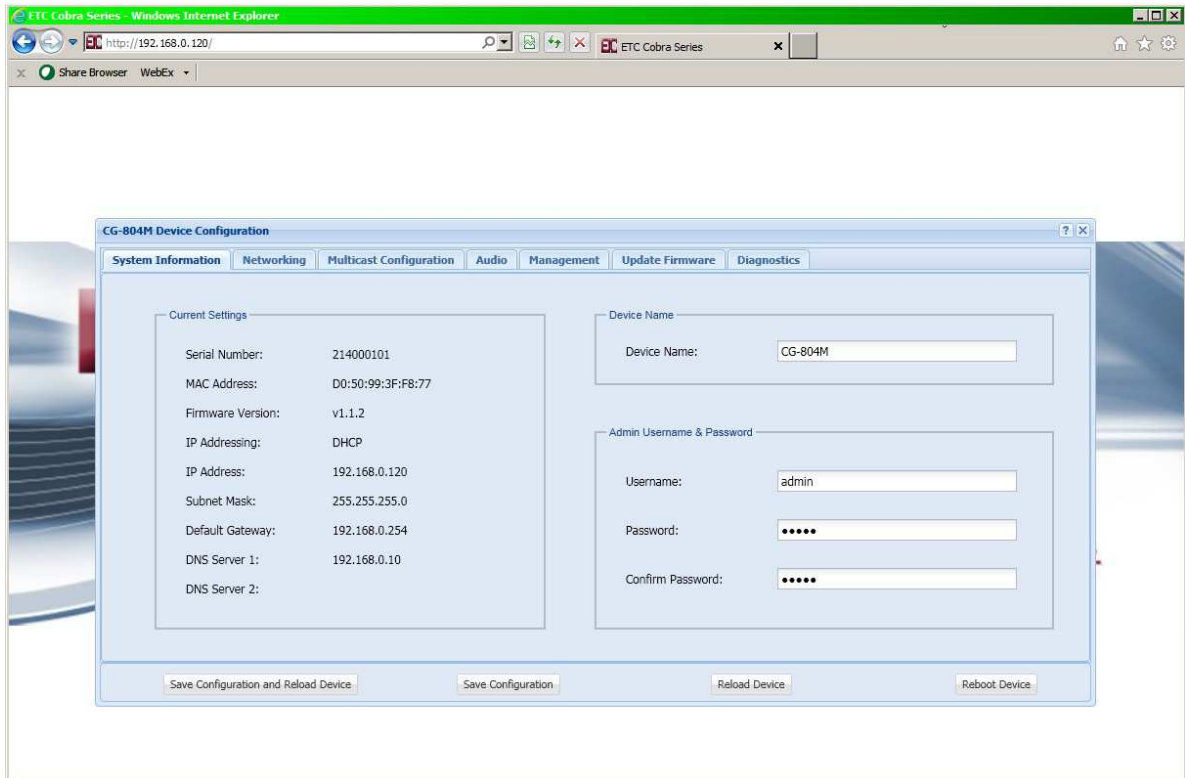
Figure 1



2.2 System Settings

After logging in, you are brought to the System Information page where administrative functions of the CG-804M 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

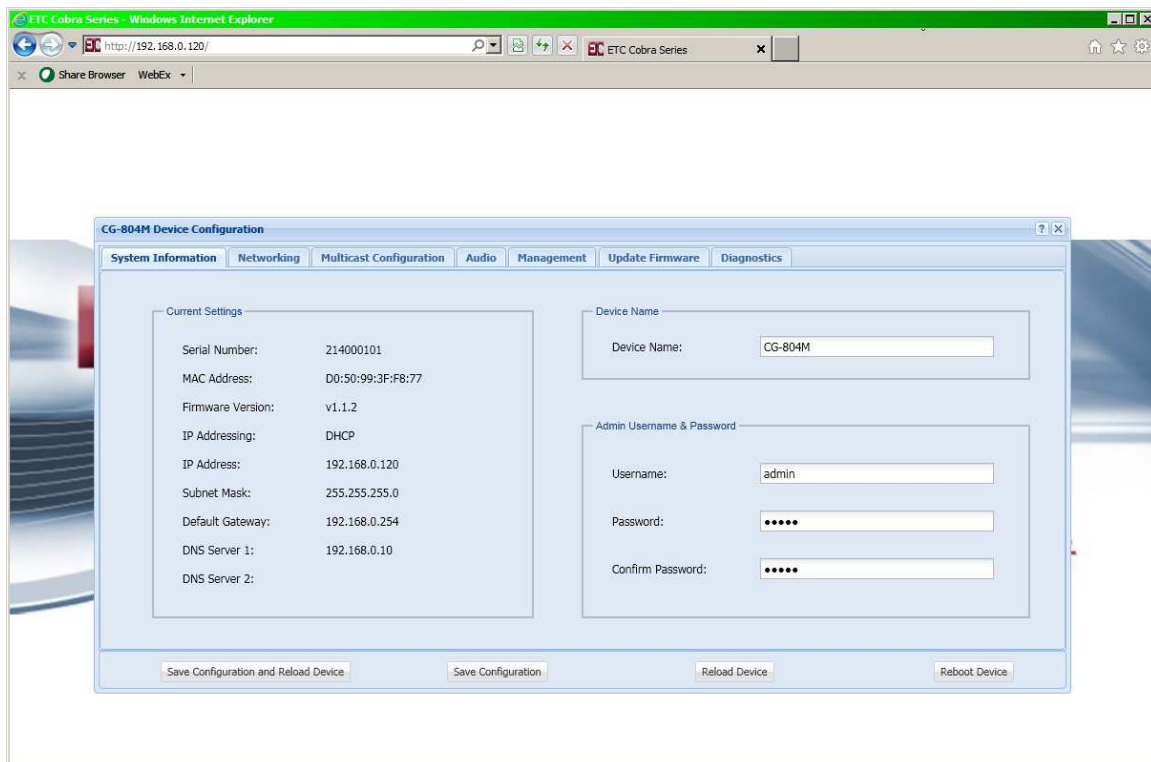


- **System Information** - This page displays device information and admin definable fields for device name and login credentials.
- **Networking** - This page allows the administrator to configure IP settings for the device and select static or DHCP.
- **Multicast Configuration** - This page allows the administrator to configure multicast related details for the respective channels.
- **Audio** - This page allows the administrator to select a channel for monitoring audio activity on a selected channel.
- **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



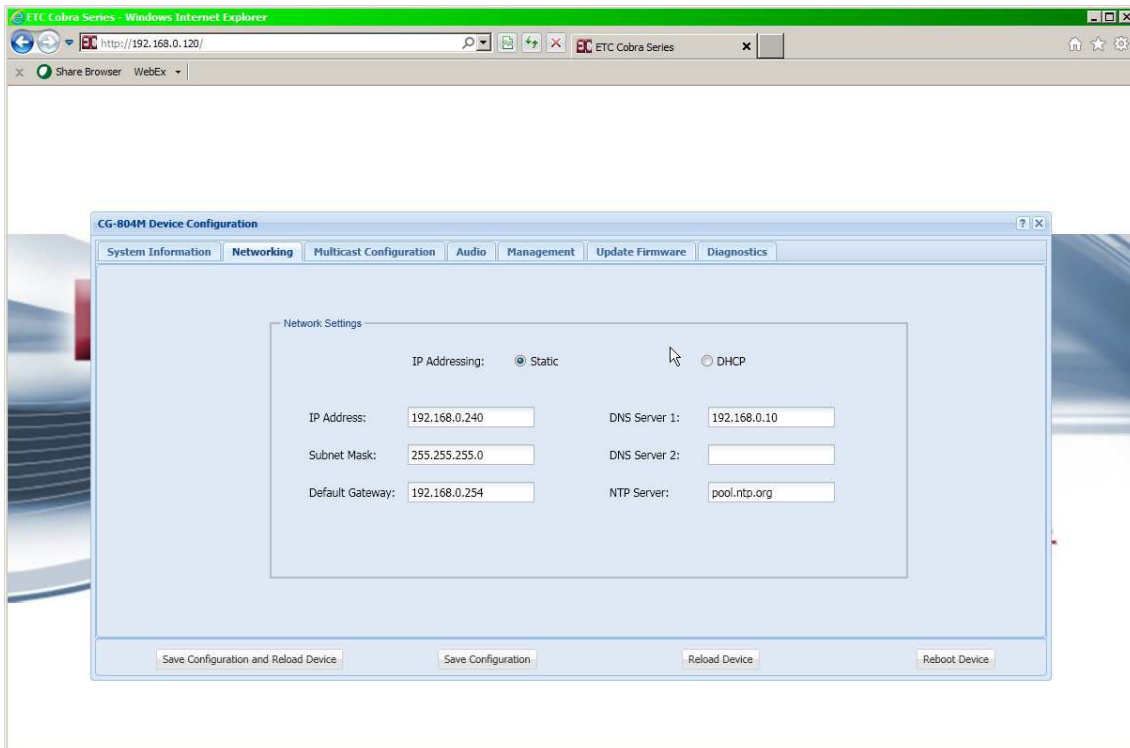
- **Device Name** - Enter any alpha-numeric sequence to uniquely identify the device.
- **Username** - Enter new login username. Default is: admin
- **Password** - Enter new login password. Default is: admin
- **Confirm Password** - Reenter new password to confirm.

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 set from factory to Static and IP address is 192.168.0.240 as indicated in figure below. ETC can pre-configure the gateway with alternate IP configuration upon request. 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

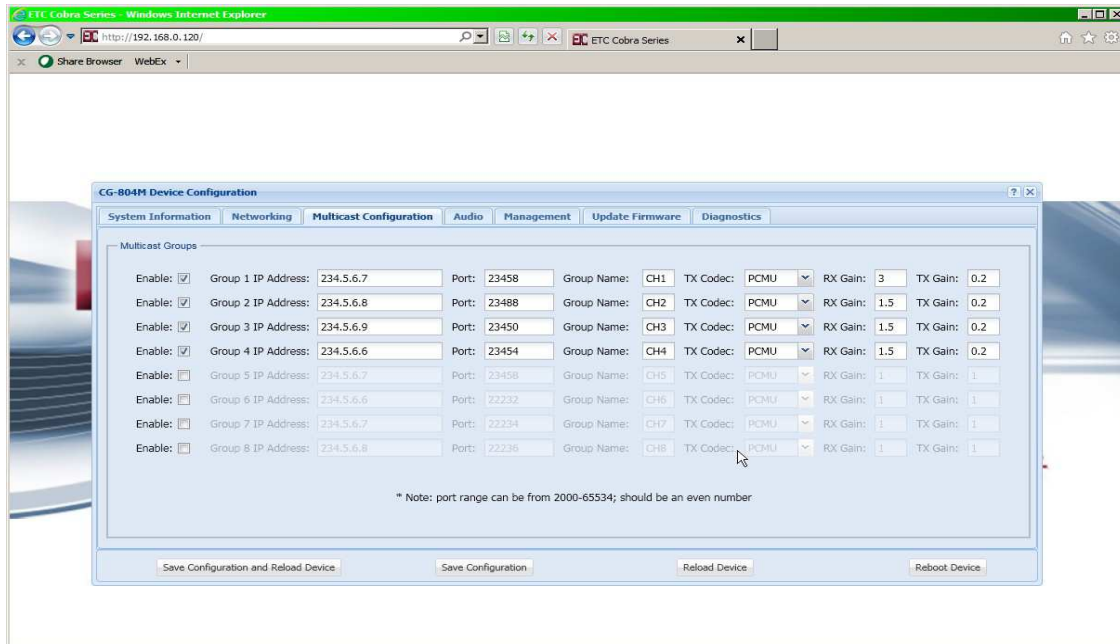
When finished entering IP information click the **Save Configuration & Reload** button at bottom of screen. Once finished with the reload, click the **Reboot** button.

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

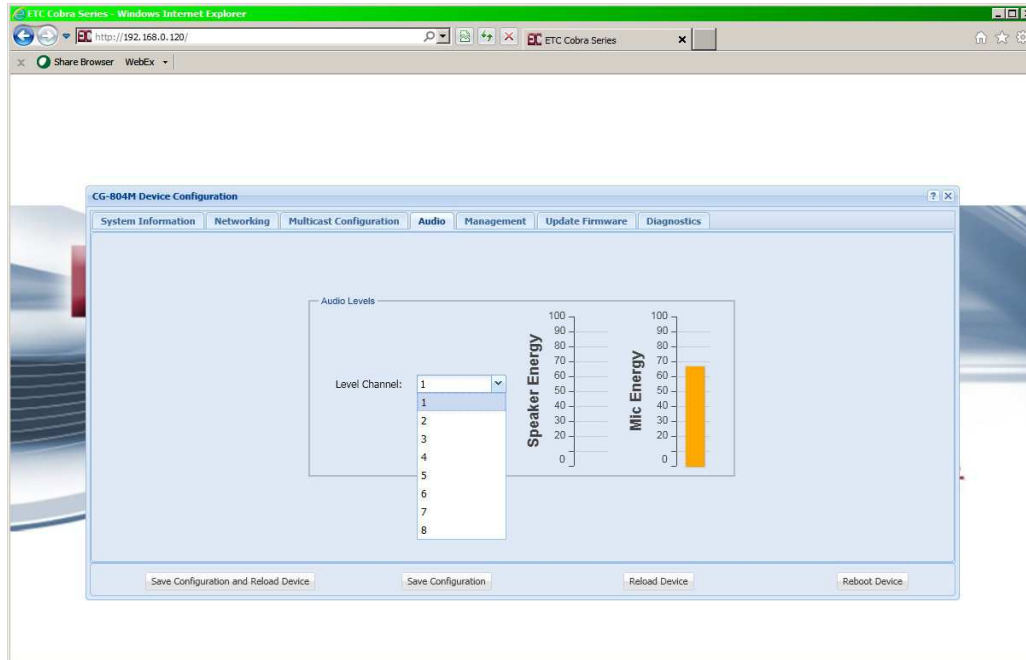


- **Enable** - Allows the administrator to disable channels which are not in use.
- **Group 1-4 Address** - Allows the administrator to enter multicast addresses for the respective channels 1-4. It is highly recommended to utilize different multicast addresses & ports for each of the respective channels.
- **Group 5-8 Address** - Allows the administrator to enter multicast addresses for the respective channels 5-8. It is highly recommended to utilize different multicast addresses & ports for each of the respective channels. Channels 5-8 are enabled for the CG-808M 8 channel gateway.
- **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.
- **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.
- **Rx Gain** - Allows the administrator to adjust the Receive (input) gain of the respective analog E&M port.
- **Tx Gain** - Allows the administrator to adjust the Transmit (output) gain of the respective analog E&M port.

2.7 Audio Page

The Audio page allows the administrator to monitor Rx & Tx audio activity on the selected channel. See Figure 7.

Figure 7

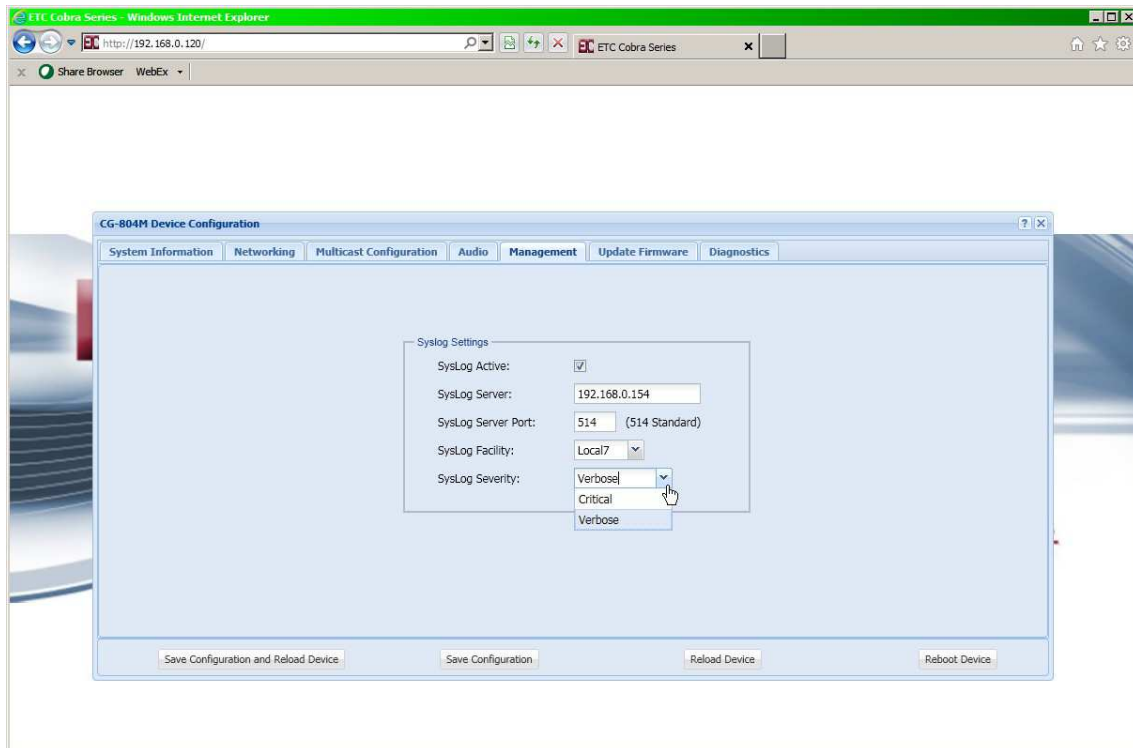


- **Level Channel** - Allows the administrator to select a channel for monitoring audio levels/activity on the selected channel. Note: This is a diagnostics tool only levels are adjusted via the multicast page.
- **Speaker Energy** - Provides visual indication of audio being transmitted (output) out of the analog E&M port.
- **Mic Energy** - Provides visual indication of audio received (input) in to the analog E&M port.

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



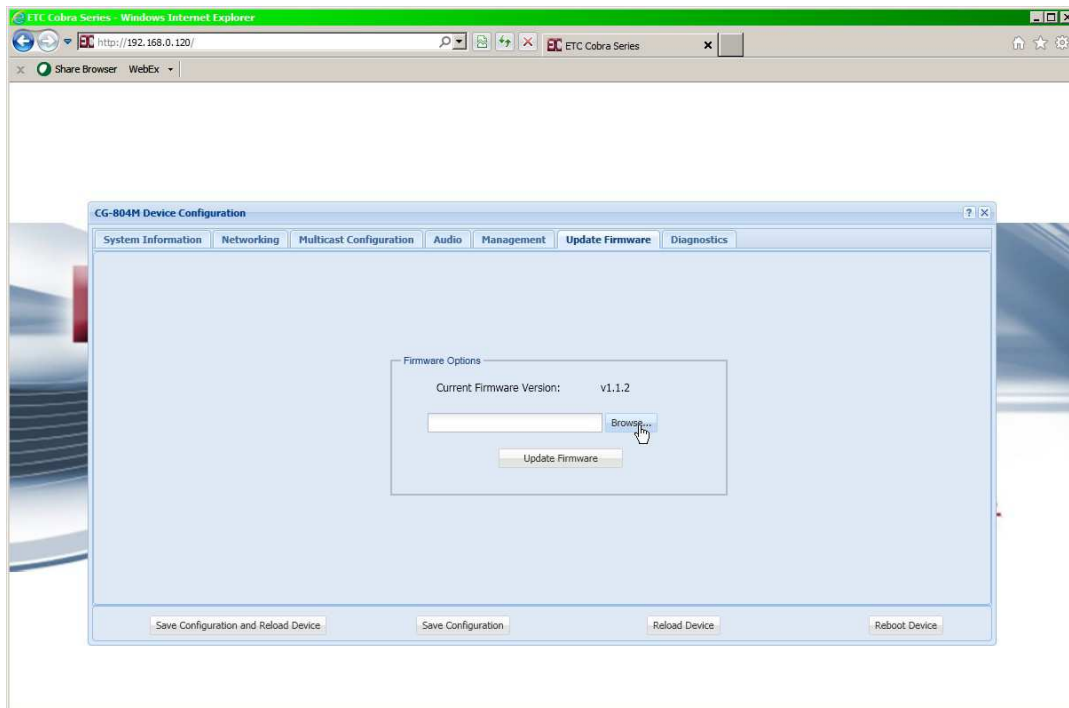
- **Syslog Active** - Click the check box to enable Syslog reporting feature, uncheck to disable.
- **Syslog Server** - Input the respective IP address of the Syslog server where status reports will be sent.
- **Syslog Server Port** - Input the respective port the device will be reporting status to.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

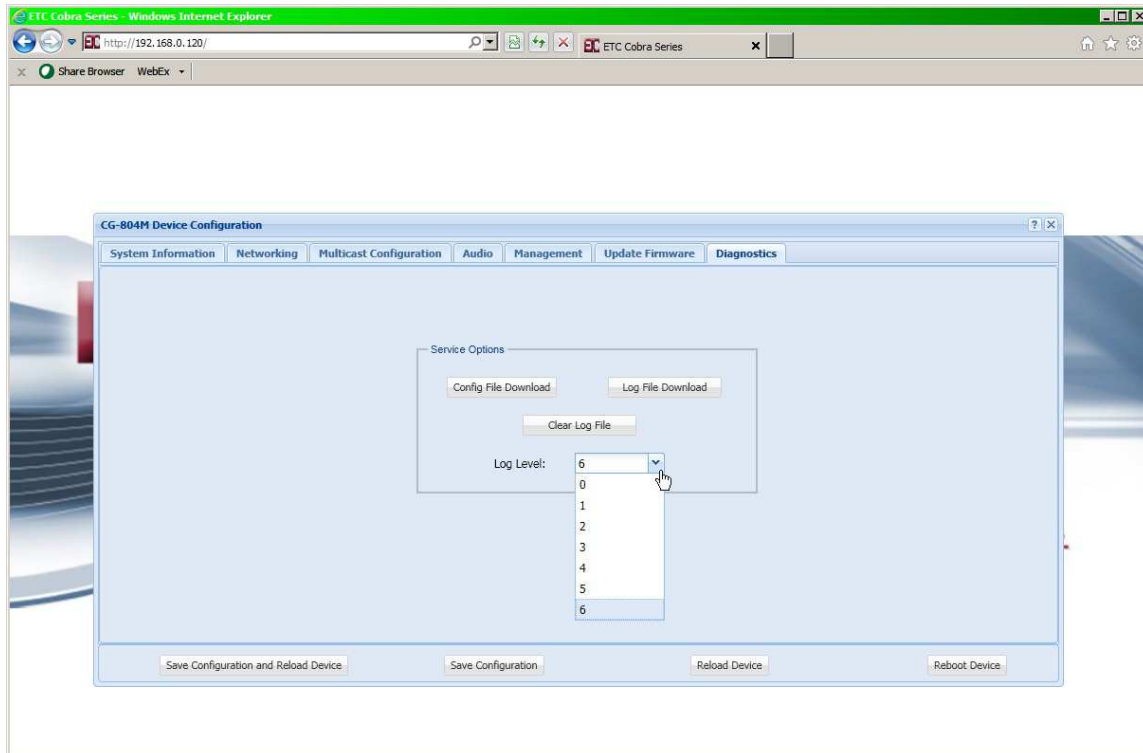


NOTE: AFTER UPDATING FIRMWARE, YOU MUST REFRESH YOUR BROWSER WINDOW (Press F5) FOR NEW FEATURES TO BE DISPLAYED. Most browsers will cache previous pages of the device and therefore a refresh must be performed after a firmware update.

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 down load the devices current configuration to a .conf file which can be read by any text editing application.
- **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 down load 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 factory set as previously indicated in this guide.

Q: How do I change the device IP?

A: Once the device has booted up, you will most likely need to change the IP of your PC to match the range of the CG-804, 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.

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 page and confirm audio activity on the respective channel

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 (press F5).

Q: What is the pin out for the E&M ports?

A: The pin out for each E&M port is identical and is as follows:

TX = Pins 1 & 2 or pair 2 if using 568B schema

RX = Pins 4 & 5 or pair 1 if using 568B schema

CC = Pins 7 & 8 or pair 4 if using 568B schema

Note: Pins 7 & 8 provide a contact closure when audio is being transmitted out of the analog port.

4.0 Appendix

4.1 Specifications

Channels

- (4) Multicast channels
- (4) Analog E&M channels,
Tx=pins 1 & 2, Rx=pins 4 & 5

Call Types

- Multicast IP broadcast

Signaling

- None

Interfaces

- Analog E&M ports (4), Balanced,
600 Ohm, transformer isolated
- USB/PS2 mouse/keyboard & VGA
- NIC, (1) RJ45, 100Mb Ethernet

Network Requirements

- 100 Base T, (full duplex)
- Protocols - RTP, UDP, TCP, HTTP,
Syslog, DHCP, NTP, IGMP, DNS,
SSH, SFTP

Dimensions

- Width - 19" / 483 mm
- Depth - 14" / 356 mm
- Height - 1.75" / 45 mm (1 RU)
- Weight - 13 lbs / 6 kg

Media

- Bandwidth - codecs: G.711 80 kbps, G.729 20kbps.
- RTP, UDP
- Linux OS,
- Audio Latency - Less than 50 ms
- Audio - 300Hz-4kHz, Line level audio (-20dB to -3dB)

Management

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

Power

- 100-240 VAC, 5 A

Thermal

- 260 Watts
- 887 BTU/hr
- Cooling - Fan

4.2 Syslog Messages

Below is a list of generic Syslog messages the CG-804M 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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