

CG-951/954SAM

Administration & Setup Guide

MULTICAST • SIP • ANALOG



188 Norwich Ave
Colchester, CT 06415



(860) 295-8100



www.essentialtradingystems.com

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Release notes:

07/13/2026	Ver 3.0.18	ESChat Integration, Improved serial control communications
06/01/2026	Ver 3.0.16	Kenwood Analog and NXDN Serial Control with OTAA Introduced All units running firmware versions earlier than 3.0.13 must first be updated to version 3.0.13 before installing any newer firmware.
09/08/2025	Ver 3.0.13	EF Johnson Serial Control Introduced
11/21/2024	Ver 3.0.7	Zello Integration
9/20/2024	Ver 3.0.6	Kenwood Serial Control Introduced
5/15/2023	Ver 3.0.1	First release firmware for DB connector gateway / GPIO control introduced
2/6/2023	Ver 1.0.9	Improvements to VOX operation
1/3/2023	Ver 1.0.7	Introduced No PBX mode and adjustable VOX setting
9/12/2022	Ver 1.0.1	Introduced the ability to adjust attenuation on the SIP side
3/5/2022	Ver 0.0.36	“Vox” and “PTT In” settings introduced
4/1/2021	Ver 0.0.25	First official release

1.0 Product Overview

1.1 Product Description

The CG-951SAM is a Single Radio VoIP Gateway and the CG-954SAM is a Four Radio VoIP Gateway, which operates as a Multicast / SIP and Analog VoIP Gateway device.

1.2 Product features

- **LED's** - LEDs on the front panel provide visual indication of network Link/Activity. LEDs on the back indicate audio activity when LMR option checked
- **Ethernet** - The CG-951SAM and CG-954SAM is equipped with a single Ethernet port for connecting to your network.
- **Radio Ports** - The CG-951SAM is equipped with 1 analog (E&M type) audio port (DB25). The CG-954SAM is equipment with 4 analog (E&M type) audio port (DB25s). The Tx & Rx on each port are 600Ω, balanced transformer isolated with programmable delay and contact closure for PTT out and COR.
- **Console Port - Optional feature**, these ports are E&M type audio ports design for connectivity to an analog radio console system. Each port is 600Ω, balanced, transformer isolated with sensing circuitry for "PTT in" from the console system.

2.0 Administration

2.1 Login

The CG-95XSAM is configured via browser interface. CG-95XSAM's ship with IP - 192.168.0.248 as default. All CG-95XSAM's will have a MAC address starting with 74:19: f8:3x:xx:xx so you will be able to find it more easily on your network if using DHCP.

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 then press enter. The CG-95XSAM 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-954SAM are presented as tabs across the top of the window. See Figure 2.

Figure 2

The screenshot displays the 'CG-954SAM CG Device Configuration' window. At the top, there is a tabbed interface with the following tabs: 'System Information' (selected), 'Networking', 'Channels Configuration', 'Multicast Monitor', 'Analog Ports', 'Management', 'Firmware and Licensing', and 'Diagnostics'. The 'System Information' tab is active, showing two main sections: 'Current Settings' and 'Device Name'.

Current Settings:

Serial Number:	31801000
MAC Address:	9E:40:C7:63:C2:38
Firmware Version:	v3.0.1
IP Addressing:	Static
IP Address:	192.168.0.248
Subnet Mask:	255.255.255.0
Default Gateway:	192.168.0.254
DNS Server 1:	8.8.8.8
DNS Server 2:	

Device Name:

Device Name:

Admin Username & Password:

Username:

Password:

Confirm Password:

At the bottom of the window, there are four buttons: 'Save Configuration and Reload Device', 'Save Configuration', 'Reload' (with a dropdown arrow), and 'Reboot Device'.

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

CG-954SAM CG Device Configuration

System Information Networking Channels Configuration Multicast Monitor Analog Ports Management Firmware and Licensing Diagnostics

Current Settings

Serial Number:	31801000
MAC Address:	9E:40:C7:63:C2:38
Firmware Version:	v3.0.1
IP Addressing:	Static
IP Address:	192.168.0.248
Subnet Mask:	255.255.255.0
Default Gateway:	192.168.0.254
DNS Server 1:	8.8.8.8
DNS Server 2:	

Device Name

Device Name:

Admin Username & Password

Username:

Password:

Confirm Password:

- **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.
- **Channels Configuration** - This page allows the administrator to configure Multicast / SIP & analog settings for each respective channel
- **Multicast Monitor** - This page allows the administrator view Tx/Rx levels of each multicast channel.
- **Analog Ports** - This page allows the administrator to view activity on analog port as well as adjust Tx & Rx levels for each analog port
- **Management** - This page provides the administrator with access to settings for syslog reporting & https settings. New management-related features will be added to this page as they are developed.
- **Firmware & Licensing** - This page allows the administrator to upgrade device firmware and install license file to increase channels.
- **Diagnostics** - This page allows the administrator access to diagnostic tools such as activity log, config file download & packet capture.

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

The screenshot shows the 'CG-954SAM CG Device Configuration' window with the 'System Information' tab selected. The window has a title bar with a help icon and a close button. Below the title bar is a navigation bar with tabs: 'System Information', 'Networking', 'Channels Configuration', 'Multicast Monitor', 'Analog Ports', 'Management', 'Firmware and Licensing', and 'Diagnostics'. The main content area is divided into two columns. The left column, titled 'Current Settings', displays the following information: Serial Number: 31801000, MAC Address: 9E:40:C7:63:C2:38, Firmware Version: v3.0.1, IP Addressing: Static, IP Address: 192.168.0.248, Subnet Mask: 255.255.255.0, Default Gateway: 192.168.0.254, DNS Server 1: 8.8.8.8, and DNS Server 2: . The right column contains two sections: 'Device Name' with a text input field containing 'CG-954SAM', and 'Admin Username & Password' with three text input fields: 'Username' containing 'admin', 'Password' containing '.....', and 'Confirm Password' containing '.....'. At the bottom of the window, there are four buttons: 'Save Configuration and Reload Device', 'Save Configuration', 'Reload' (with a dropdown arrow), and 'Reboot Device'.

Current Settings	
Serial Number:	31801000
MAC Address:	9E:40:C7:63:C2:38
Firmware Version:	v3.0.1
IP Addressing:	Static
IP Address:	192.168.0.248
Subnet Mask:	255.255.255.0
Default Gateway:	192.168.0.254
DNS Server 1:	8.8.8.8
DNS Server 2:	.

Device Name	
Device Name:	CG-954SAM

Admin Username & Password	
Username:	admin
Password:	
Confirm Password:	

Buttons at the bottom: Save Configuration and Reload Device, Save Configuration, Reload, Reboot Device

- **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** - 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 static. See Figure 5 below.

Figure 5

CG-954SAM CG Device Configuration

System Information | **Networking** | Channels Configuration | Multicast Monitor | Analog Ports | Management | Firmware and Licensing | Diagnostics

Network Settings

IP Addressing: ☒ Static ☐ DHCP

IP Address: DNS Server 1:

Subnet Mask: DNS Server 2:

Default Gateway: NTP Server:

DSCP/QoS: STUN Server:

Save Configuration and Reload Device | Save Configuration | Reload | Reboot Device

- **IP Address** - Enter static IP address for the gateway, default is 192.168.0.248. In the absence of a DHCP server the device will load the default IP
- **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
- **DSCP/QoS** - Select either Default Forwarding or Expedited Forwarding from the drop down. Selecting Expedited Forwarding will tag RTP packets with DSCP bits 46 (EF). RTP packets are not tagged if Default Forwarding is selected. Device is set from factory to Default Forwarding.

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 Channels Configuration Page

The Channels Configuration page allows an administrator to configure the respective channels with Multicast, SIP and Analog port info. See Figure 6 below.

Figure 6

The screenshot shows the 'CG-954 LAB2 CG Device Configuration' web interface. The 'Channels Configuration' tab is selected, and 'Channel 1' is active. The interface includes several sections: 'Channel Options' with fields for 'Enabled' (checked), 'Channel Name' (CH1), 'SIP Rx Level' (1), 'SIP Tx Level' (1), 'No PBX' (unchecked), and 'Status' (Disabled); 'SIP Server' fields for 'SIP Server' (192.168.3.232), 'SIP Port' (5060), 'SIP User' (110), 'SIP Password' (speaker11), and 'SIP Dial Number'; 'SIP Server2' fields for 'SIP Server2' and 'SIP Port2' (5060); 'Register Timeout' (60), 'Fail Timeout', and 'RTCP Timeout'; and a 'Secure' checkbox. 'Bridge Options' include a dropdown set to 'Bridge ESChat & Analog & Multica', 'Analog Port' (Port 1), 'Vox Level' (-80), 'PTT In' (unchecked), and 'PTT In Enable Analog Port' (unchecked). 'Multicast' fields include 'Multicast IP Address' (234.5.6.7), 'Multicast Port' (23458), and 'Multicast TX Codec' (PCMU). 'Zello' fields include 'Zello Network', 'User', 'Password', 'Channel', and 'Status' (Disabled). 'Zello RX Level' (1) and 'Zello TX Level' (1) are also present. 'GPIO Control' is unchecked, 'Kenwood Control' is checked, 'EFJ Control' is unchecked, and 'ESChat Channel' is set to 'Everyone'. A note at the bottom states: '* Note: port range can be from 2000-65534; should be an even number'. At the bottom of the interface are buttons for 'Save Configuration and Reload Device', 'Save Configuration', 'Reload', and 'Reboot Device'.

- **Channel 1-4 Tab** - Clicking on a tab allows the administrator to view / configure each channel of the gateway. While the gateway is only outfitted with 1 or 4 analog audio ports, the CG-954SAM can be licensed for up to 8 channels however, you can only assign analog ports to 1-4 of the 8 channels.
- **Enable** - Checking this box enable or disables the respective channel
- **Channel Name** - This field allows the administrator to assign a name to each respective channel for easy identification.
- **SIP Rx Level** - Allows the administrator to adjust the incoming SIP audio volume level. Range 0-2.0
- **SIP Tx Level** - Allows the administrator to adjust the outgoing SIP audio volume level. Range 0-2.0
- **No PBX** - No PBX allows device to make/answer calls to/from other SIP end points without registering with a SIP Server/Proxy.
- **SIP Server** - This field allows the administrator to assign the IP Address of the SIP server.
- **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 Port** - Allows the administrator to assign the specific port to be used for making SIP connections.
- **SIP Port 2** - Allows the administrator to assign the specific port to be used when using the fail over SIP server for making SIP connections.
- **SIP User** - Allows administrator to assign the channel a specific extension for registration and connection purposes.
- **SIP Password** - Allows the administrator to assign a unique password for registration with the SIP Server.

- **Number to Dial** - This field allows the administrator to assign an extension the device will dial and connect to.
- **Reg/Fail Timeout** - These fields allow the administrator to set the time span, in seconds, for re-registration and registration fail of the channel to the SIP server.
- **RTCP Timeout** - This field allows the administrator to set the time span, in seconds, in which the device will drop an active call after RTCP packets are no longer present.
- **Bridge Options** - Clicking this field will present a drop down with selectable option for how the channel can perform
 - **Bridge Analog & SIP & Multicast** - This option connects all functions of the channel, SIP, Multicast & analog
 - **Bridge Analog & SIP** - This option sets the channel to connect the analog port with SIP only.
 - **Bridge Analog & Multicast** - This option sets the channel to connect the analog port to Multicast only.
 - **Bridge SIP & Multicast** - This option sets the channel to connect the SIP and multicast only.
 - **Bridge Zello & Analog & Multicast** - This option sets the channel to connect the analog port to multicast and Zello
 - **Bridge ESChat & Analog & Multicast** - This option sets the channel to connect the analog port to multicast and ESChat
- **Analog Port** - Clicking this field will present a drop down where the administrator can assign an analog port (1-4) to the respective channel if applicable.
- **Vox** - Enables the contact closure on pins 7&8 based on incoming audio level from either multicast, SIP or both (range -94db to 6db). **-80 Recommended**
- **PTT In** - Once checked the gateway will ignore any analog audio unless contact closure has been detected on pins 3&6 on the analog port.
- **Multicast IP** - This field allows the administrator to assign an IP address, in the multicast range, to broadcast audio over the LAN/WAN environment.
- **Multicast Port** - This field allows the administrator to assign the specific port to be used for broadcasting multicast audio over a network. **Note: Ports assigned must be even numbered.**
- **Multicast Tx Codec** - Clicking this field will present a drop down where the administrator can select the codec to be used for the multicast audio. Options are: G711uLaw, G711ALaw and G.729
- **GPIO Control (BCD Steering)** - Enables the gateway to trigger up to 5 configurable GPIO pins for various auxiliary functions on the radio such as GPIO channel control. For more details on this functionality please refer to page 14 of the CS-64/61 setup guide.
- **Kenwood Control** - Enables the gateway to use serial communication with Kenwood mobile base radio in analog, P25 mode and NXDN with OTAA for various auxiliary functions on the radio such as Zone and Channel control. For more details on this functionality please refer to page 15 of the CS-64/61 setup guide.

NOTE: If connecting gateway to Kenwood NX-5x00 or EF Johnson VM-5000 using ETC supplied cable, Pin 12 of radio accessory connector must be programmed for External PTT.

- **EFJ Control** - Enables the gateway to use serial communication with EF Johnson mobile base radio in P25 mode for various auxiliary functions on the radio such as Zone and Channel control. For more details on this functionality please refer to page 15 of the CS-64/61 setup guide.

PLEASE NOTE: "Third Party Interface" option, must be purchased from EF Johnson to utilize this feature.

2.7 Zello Configuration

The CG-951 and CG-954 gateways are able to connect to Zello Work on a per channel basis. Zello connection can be bridged with both analog port as well as bi-directional Multicast RTP. Gateway uses a single User/Gateway license on the Zello Work platform for each channel. See Figure 7 below.

Figure 7

The screenshot displays the 'CG-954SAMZ CG Device Configuration' web interface. The 'Channels Configuration' tab is active, showing settings for 'Channel 1'. The interface includes several sections: 'Channel Options' with fields for 'Enabled' (checked), 'Channel Name' (CH1), 'SIP Rx Level' (1), 'SIP Tx Level' (1), 'No PBX' (checked), and 'Status' (Acc Status); 'SIP Server' fields (SIP Server, SIP Port: 4500, SIP User: 1001, SIP Password: CG-904CH1, SIP Dial Number); 'SIP Server2' fields (SIP Port2: 5060, Register Timeout: 60, Fail Timeout: 60, RTCP Timeout: 30, Secure); 'Bridge Options' with a dropdown set to 'Bridge Zello & Analog & Multicast', 'Analog Port' (Port 1), 'Vox Level' (-80), 'PTT In' (unchecked), and 'PTT In Enable Analog Port' (unchecked); 'Multicast' fields (Multicast IP Address: 234.5.6.7, Multicast Port: 23458, Multicast TX Codec: PCMU); 'Zello Network' fields (Zello Network: etcapl75, User: CG-954CH1, Password: CG-954CH1, Channel: Everyone, Status: Acc Status); and 'Zello RX Level' (1) and 'Zello TX Level' (1). At the bottom, there are checkboxes for 'GPIO Control', 'Kenwood Control', and 'EFJ Control', along with a note: '* Note: port range can be from 2000-65534; should be an even number'. Action buttons at the bottom include 'Save Configuration and Reload Device', 'Save Configuration', 'Reload', and 'Reboot Device'.

- **Zello Network** - Enter the Zello Work Network Name assigned by Zello
- **User** - Enter either a Zello Username or a Zello Gateway Name created for the CG-951/CG-954
- **Password** - Enter the Password created for the CG-951/CG-954 Zello User/Gateway
- **Channel** - Enter the name of the Zello Channel the CG-951/CG-954 should connect to
- **Status** - Displays the Zello connection status
- **Zello RX Level** - Allows the administrator to adjust the incoming Zello audio volume level. Range 0-2.0
- **Zello TX Level** - Allows the administrator to adjust the outgoing Zello audio volume level. Range 0-2.0

2.8 ESChat Configuration

The CG-951 and CG-954 gateways can connect to ESChat on a per channel basis. ESChat connection can be bridged with both analog port as well as bi-directional Multicast RTP. **NOTE: Zello Work and ESChat connections may be bridged internally by setting identical Multicast IP address and Port on a channel configured for ESChat and a channel configured for Zello.** See Figure 8 below.

Figure 8

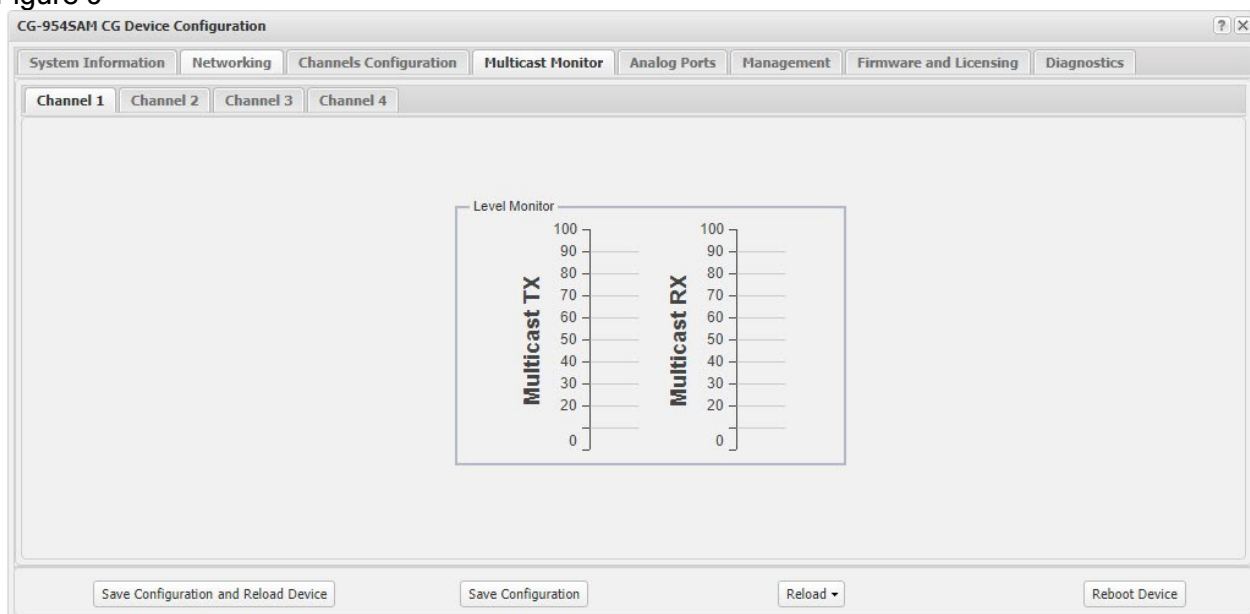
The screenshot shows the 'CG-954 LAB2 CG Device Configuration' web interface with the 'Management' tab selected. The interface is divided into three main sections: 'ESChat Account', 'Syslog Settings', and 'Web Server Settings'. The 'ESChat Account' section includes fields for 'Enterprise ID' (860), 'User' (etcgateway), 'Activation Code' (empty), 'Jitter Buffer (ms)' (200), and 'Output Volume' (100). The 'Syslog Settings' section includes a 'SysLog Active' checkbox (unchecked), 'SysLog Server' (10.1.1.100), 'SysLog Server Port' (514), 'SysLog Facility' (Local7), and 'SysLog Severity' (Critical). The 'Web Server Settings' section includes an 'Enable HTTP' checkbox (checked). At the bottom, there are four buttons: 'Save Configuration and Reload Device', 'Save Configuration', 'Reload', and 'Reboot Device'.

- **Enterprise ID** - Enter the Enterprise ID of your system assigned by ESChat.
- **User** - Enter either a ESChat Username created for the CG-951/CG-954
- **Activation Code** - Enter the Activation Code created by ESChat for the CG-951/CG-954 User
- **Jitter Buffer** - We suggest using a higher number such as 200 for slower networks as otherwise audio degradation can occur. Range is 1-1000.
- **Output Volume** - Allows the administrator to adjust the incoming ESChat connection audio volume level. Range 1-100
- **ESChat Channel** - Enter the name of the ESChat Channel/Group the CG-951/CG-954 should connect to. This setting is on per channel basis and is located under the Channel Configuration tab.

2.9 Multicast Monitor

The Multicast Monitor page allows the administrator to view audio activity on a respective channel. Click on the respective channel tab to view the channel's activity. See figure 9 below.

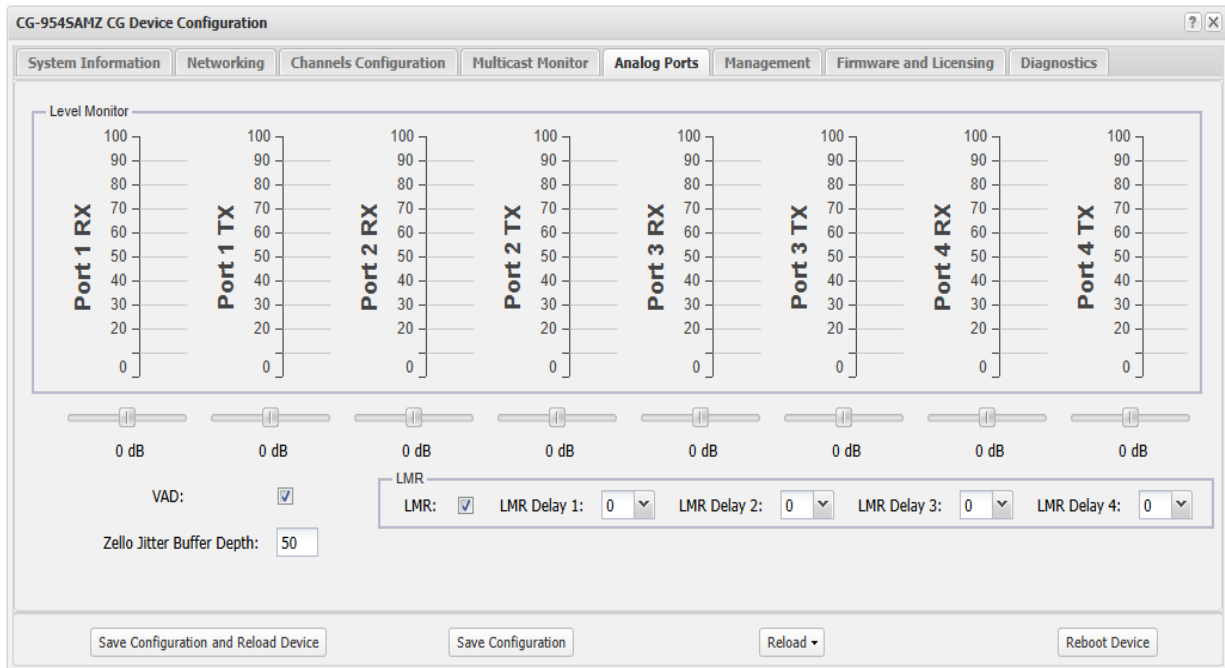
Figure 9



2.10 Analog Port Page

The Analog Port page allows the administrator to monitor audio activity on each analog port as well as adjust levels. See Figure 10.

Figure 10



- **Channel Levels** - Allows the administrator monitor transmit & receive levels of each channel
- **Tx / Rx Sliders** - The sliders under each corresponding level meter allows the administrator to adjust the respective Tx & Rx level for each channel. The ports are set default to Zero gain / attenuation and have a range of -6dB to +6dB.
- **VAD** - Voice Activity Detection, enabling this feature allows the CG-954SAM to only stream multicast packets when voice is received into the analog ports. Enabling/disabling this feature affects all channels. If disabled, the CG-954SAM will continuously stream empty multicast packets on the network for any configured channel.
- **LMR** - Enabling this check box turns on additional features for use with Land Mobile Radios (LMR); 1. Enables a contact closure when outgoing audio is present to trigger the PTT of a base station or equivalent radio. 2. Enables audio delay timer for amount of time specific in the respective field.
- **LMR Delay** - Clicking this field will present a drop down where the administrator can select audio delay, in milliseconds, from 0-500 in 100ms increments. Note: outgoing audio is delayed for the select time span after the PTT out has been triggered.
- **Zello Jitter Buffer Depth** - Default value is 5. We suggest using a higher number, such as 50, for slower networks as otherwise audio degradation can occur. Range is 1-100.

PLEASE NOTE: Incoming audio level higher than 0db will overdrive the unit and cause it to not function properly. Please use an attenuation pad when working with a radio or device which transmits above this level.

2.11 Management

The Management tab currently provides an administrator access to input Syslog Settings for reporting device status and enabling non secure browser access. Additional features will be added to this page in the future. See figure 11 below.

Figure 11

The screenshot displays the 'Management' tab of the 'CG-954 LAB2 CG Device Configuration' window. The interface is divided into several sections. On the left, the 'ESChat Account' section contains fields for 'Enterprise ID' (860), 'User' (etcgateway), 'Activation Code' (empty), 'Jitter Buffer (ms)' (200), and 'Output Volume' (100). A note states '(activation code is one-time; cleared after first run)'. To the right, the 'Syslog Settings' section includes a 'SysLog Active' checkbox (unchecked), 'SysLog Server' (10.1.1.100), 'SysLog Server Port' (514, with '(514 Standard)' in parentheses), 'SysLog Facility' (Local7, with a dropdown arrow), and 'SysLog Severity' (Critical, with a dropdown arrow). Below this is the 'Web Server Settings' section with an 'Enable HTTP' checkbox (checked). At the bottom of the window, there are four buttons: 'Save Configuration and Reload Device', 'Save Configuration', 'Reload' (with a dropdown arrow), and 'Reboot Device'.

- **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.
- **Enable HTTP** - Unchecking this option allows only secure (https) browsing to the device for configuration. ETC utilizes a self-signed certificate for secure browsing. This feature is factory set to enable.

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

2.12 Firmware & Licensing

The Firmware & Licensing page allows an administrator to easily & quickly update firmware or load a new license file to the gateway. Periodically 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. The license options will display the number of channels the gateway is currently able to access. If more channels are needed, contact your ETC sales representative for a quote. To update channel licenses, ETC Support will send a new license file via email which can then be installed by browsing to where the file was saved and clicking "Update License." See Figure 12.

Figure 12

The screenshot shows the 'CG-954SAM CG Device Configuration' window with the 'Firmware and Licensing' tab selected. The window has a top navigation bar with tabs: System Information, Networking, Channels Configuration, Multicast Monitor, Analog Ports, Management, Firmware and Licensing, and Diagnostics. The main content area is divided into two sections: 'Firmware Options' and 'License Options'. The 'Firmware Options' section shows 'Current Firmware Version: v3.0.1' with a text input field and a 'Browse...' button. Below this is an 'Update Firmware' button. The 'License Options' section shows 'Issued for 4 channels by "ETC" at Tue May 16 19:10:41 UTC 2023 with BCD' with a text input field and a 'Browse...' button. Below this is an 'Update License' button. At the bottom of the window, there are four buttons: 'Save Configuration and Reload Device', 'Save Configuration', 'Reload' (with a dropdown arrow), and 'Reboot Device'.

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

2.13 Diagnostics Page

The Diagnostics page has been provided to allow an administrator access to troubleshooting tools such as Activity Log & Packet capture. These tools will be useful in providing ETC information specific to the device to aid in diagnosing problems. See Figure 13.

Figure 13

The screenshot shows the 'CG-954SAM CG Device Configuration' window with the 'Diagnostics' tab selected. The 'Diagnostic Options' section contains the following controls:

- Config File Download** button
- Log File Download** button
- Text input field with a **Browse...** button
- Config File Upload** button
- Clear Log File** button
- Log Level:** dropdown menu set to 6
- Packet Capture:** checkbox (unchecked)
- Download PCAP file** button

At the bottom of the window, there are four buttons: **Save Configuration and Reload Device**, **Save Configuration**, **Reload** (with a dropdown arrow), and **Reboot Device**.

- **Config File Download** - Allows the administrator to download the devices 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.
- **Packet Capture** - Clicking this checkbox will start a packet capture on the device. A pop up will indicate "uncheck box to stop packet capture". When packet capture is stopped a pop up will indicate "Press Download PCAP file button" to download the packet capture to your PC.
- **Download PCAP File** - Press this button to download the PCAP file after packet capture is complete.

3.0 Frequently Asked Questions

Q: What is the IP address of device?

A: The CG-954SAM shall be shipped set to a static IP address of 192.168.0.240.

Q: The device is not powering up?

A: Check to make sure the provided power supply is plugged into 120VAC outlet and the corresponding DC input of the device. If you do not see link or activity lights on the Ethernet port, contact ETC Support..

Q: How do I change the device IP?

A: Once the device has booted up open a browser and browse to the device's IP address, Login and go to Network settings page to change the network settings. Note: this will require you to temporarily re-IP your PC to an address in the range of the gateway i.e. 192.168.0.100.

Q: How do I perform a Factory Restore in the event I misconfigure a setting and can't access the device?

A: The device has a Factory Restore button on the PCB near the Ethernet Jack. You will need to remove the top cover to access it. Power cycle the device while pressing and holding the restore button for 20 seconds.

Note: doing this will not only restore factory Network settings but also Channel configuration details.

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

A: Labels can be changed via the "Channel Configuration" web page.

Q: User does not hear audio?

A: Is it on a specific channel or no audio on 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. If there is no analog audio, ensure the respective port has been assigned to 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 (F5).

Q: How do I adjust levels?

A: Only analog port levels are adjustable by means of a slider on the Analog Ports page. See appendix for explanation of switch settings.?

4.0 Appendix

4.1 Specifications

Channels

- (8) Multicast / SIP Channels
- (4) Analog ports

Call Types

- Multicast IP broadcast
- SIP

Signaling

- SIP
- PTT Contact Closure
- GPIO Control
- Serial

Interfaces

- 4 DB-25 Radio interface connectors
- NIC, (1) RJ45, 10Mb Ethernet,
- 5VDC, (1) coaxial power jack,

Network Requirements

- 10 Base T, (full duplex)
- Protocols – SIP, RTP, UDP, TCP, HTTP, HTTPS, Syslog, DHCP, NTP, IGMP, DNS, SFTP

Dimensions

- Width – 7.75" / 190 mm
- Depth – 9.5" / 241 mm
- Height – 2.5" / 63.5 mm
- Weight – 2 lbs / 907 g

Media

- Bandwidth - supports codecs: G.711 80 kbps, G.729 20kbps.
- RTP, UDP, analog
- Linux OS,
- Audio Latency – Less than 150 ms (Mcast to SIP)
- Audio – 300Hz-3kHz, 1 Watt RMS

Management

- Browser based - Internet Explorer, Google Chrome
- Support HTTP & HTTPS (self signed certificate)
- Upgradeable device firmware via file upload
- Upgradeable channel licensing via file upload
- Syslog output
- SNMP output
- QoS

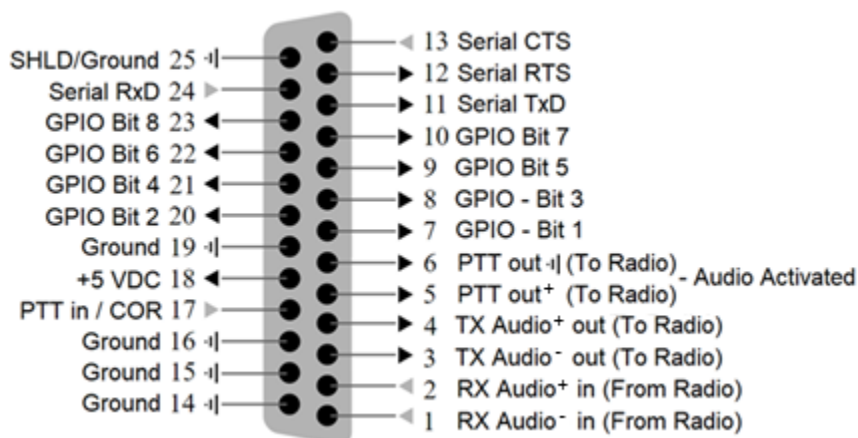
Power

- 5VDC @ 1Amp, via provided power supply

Thermal

- 5 Watts
- 19 BTU/hr
- Cooling – Ambient air

Radio Ports Pin Out:



PLEASE NOTE:

Pin 5&6 provide audio activated dry contact closure based on VOX level setting. VOX level of -80 is recommended.

All audio inputs and outputs are transformer isolated. 600 Ohm Impedance.

CG-954 - TX audio out pins include DC blocking for direct connections to the radio's microphone input

4.2 Syslog Messages

Below is a list of generic Syslog messages the CG-954SAM 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"

CG-954SAM Hardware Product Limited Warranty

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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, 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.

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